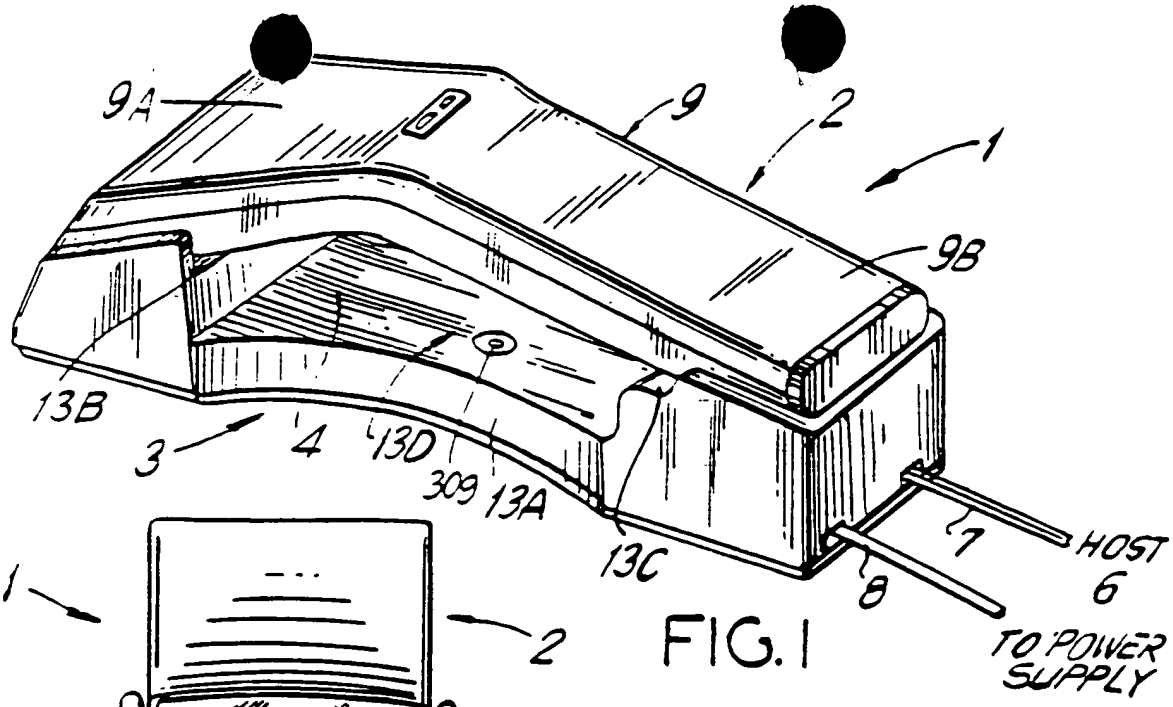


FIG. 1

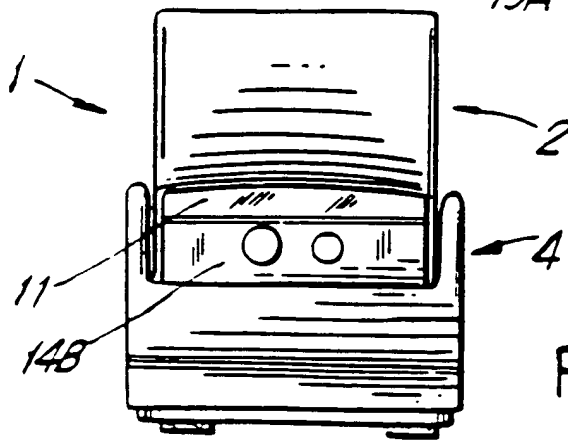


FIG. 1A

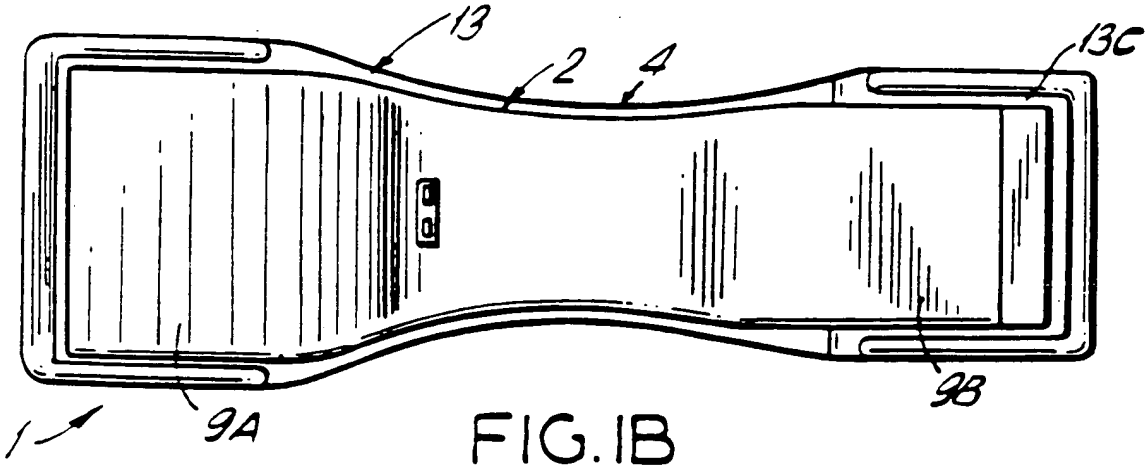


FIG. 1B

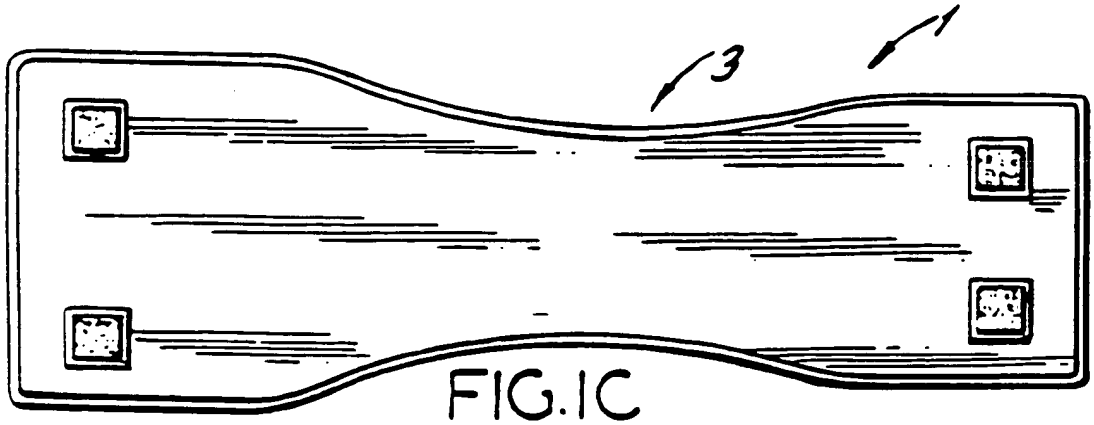


FIG. 1C

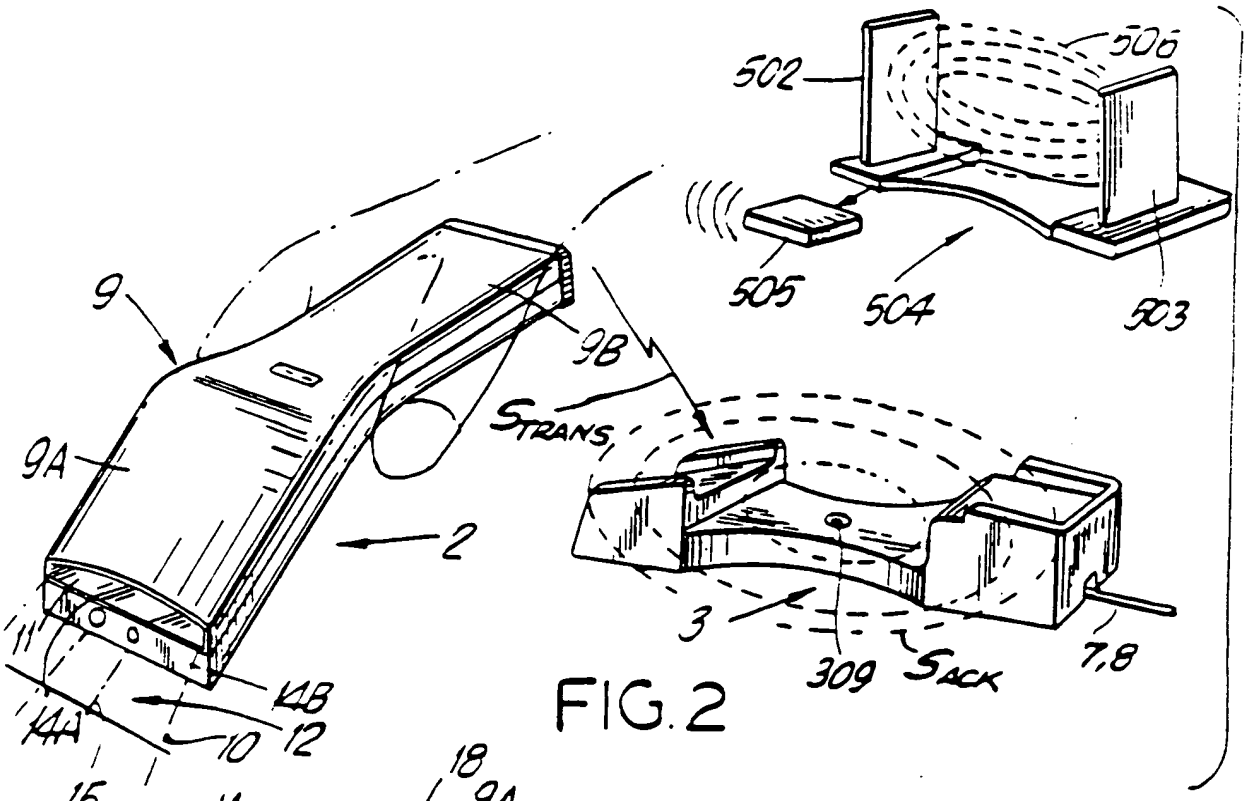


FIG. 2

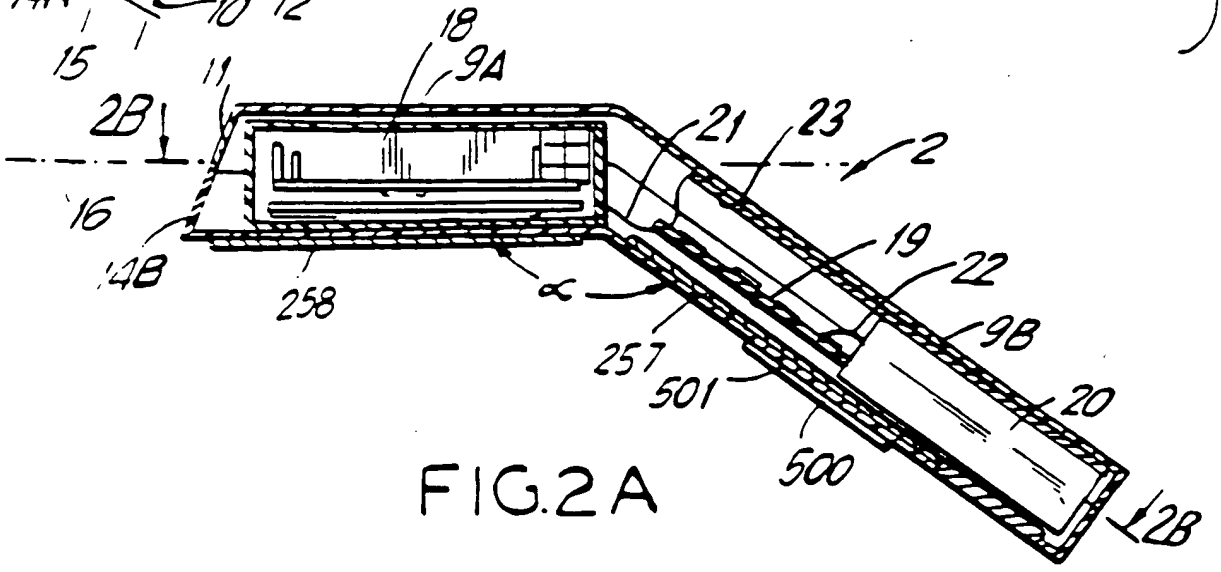


FIG. 2A

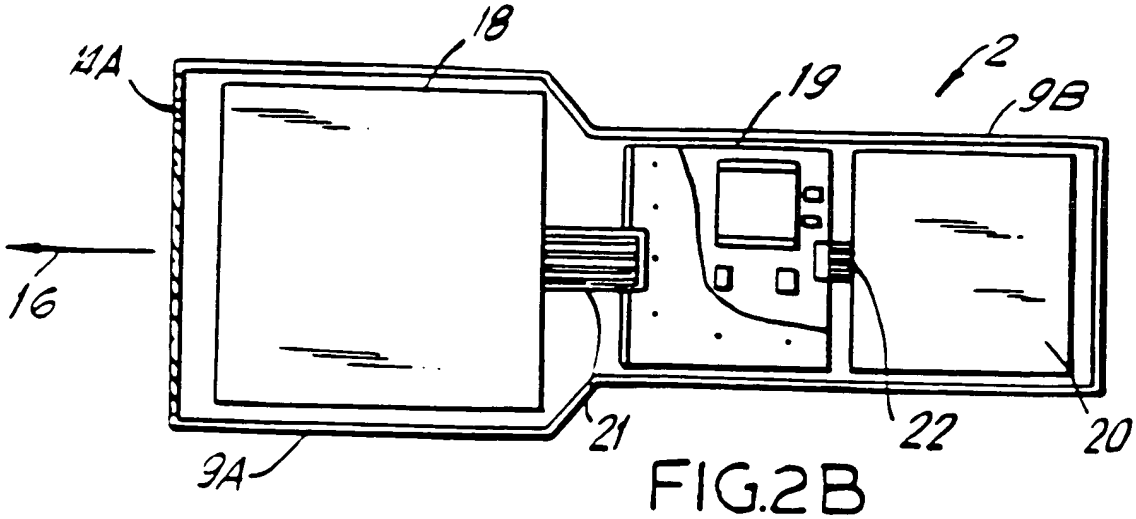


FIG. 2B

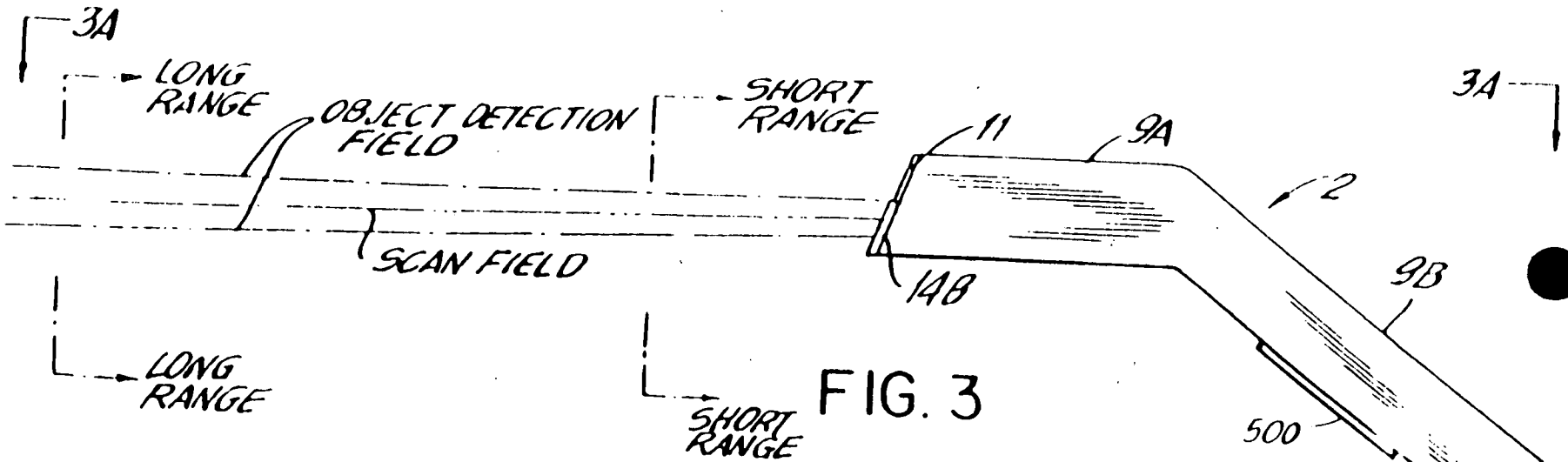


FIG. 3

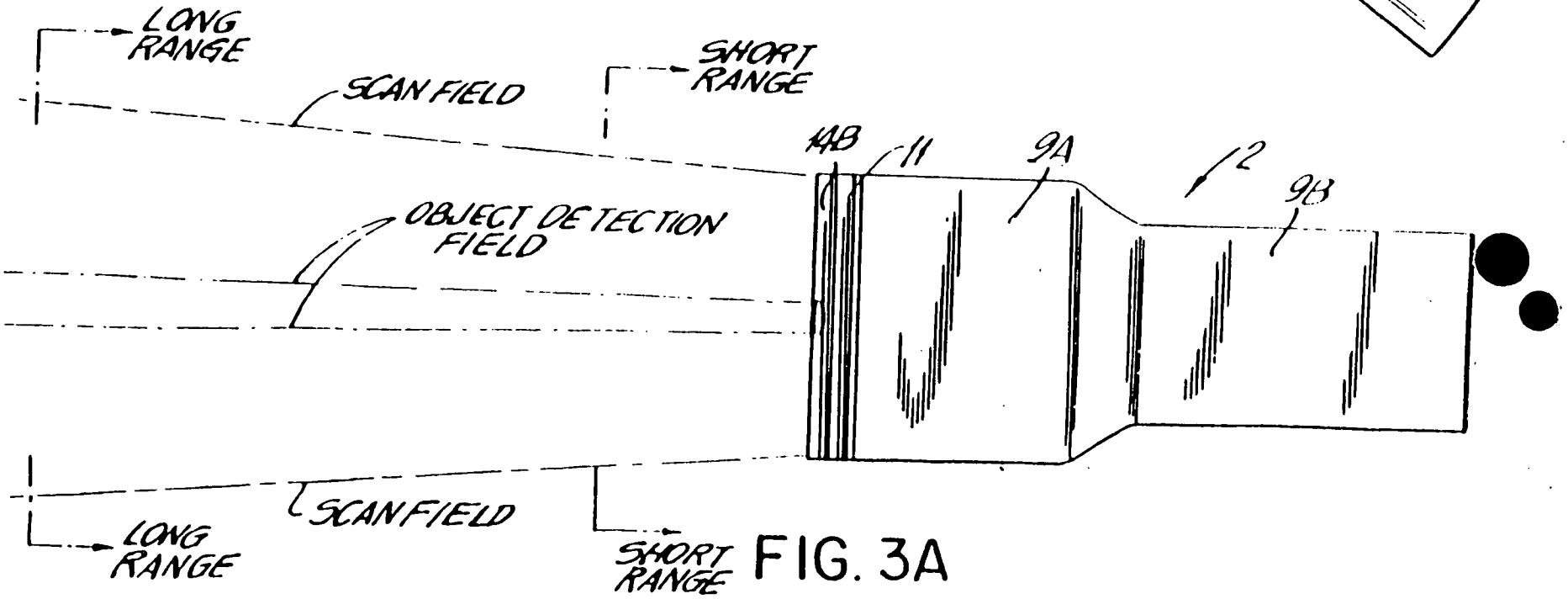


FIG. 3A

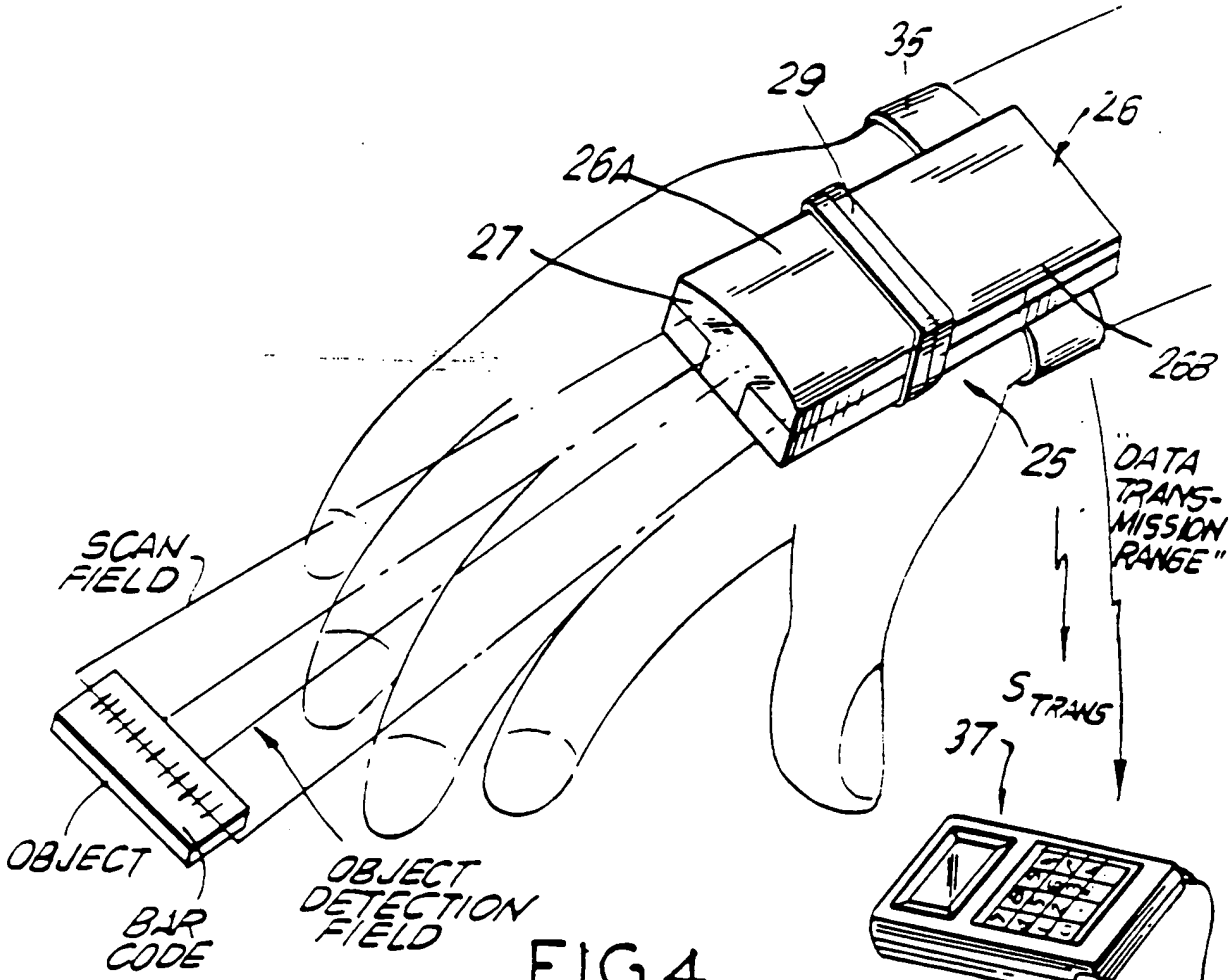


FIG.4

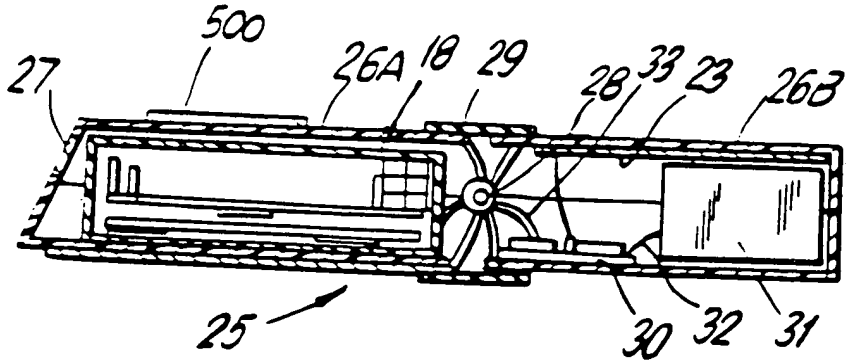


FIG.4A

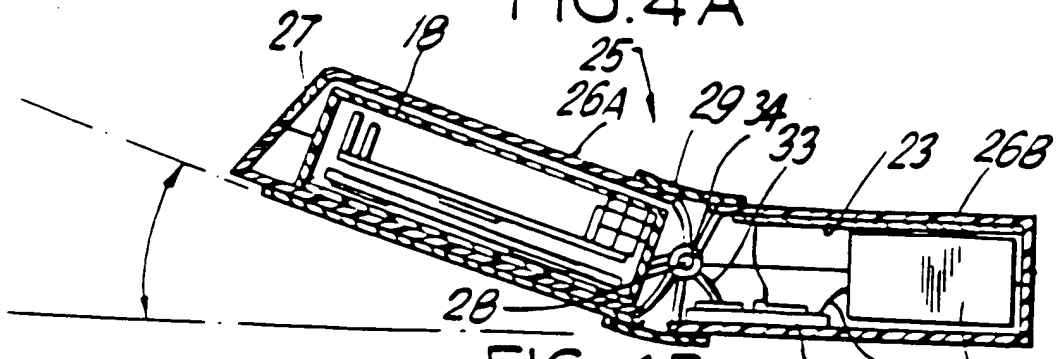


FIG.4B

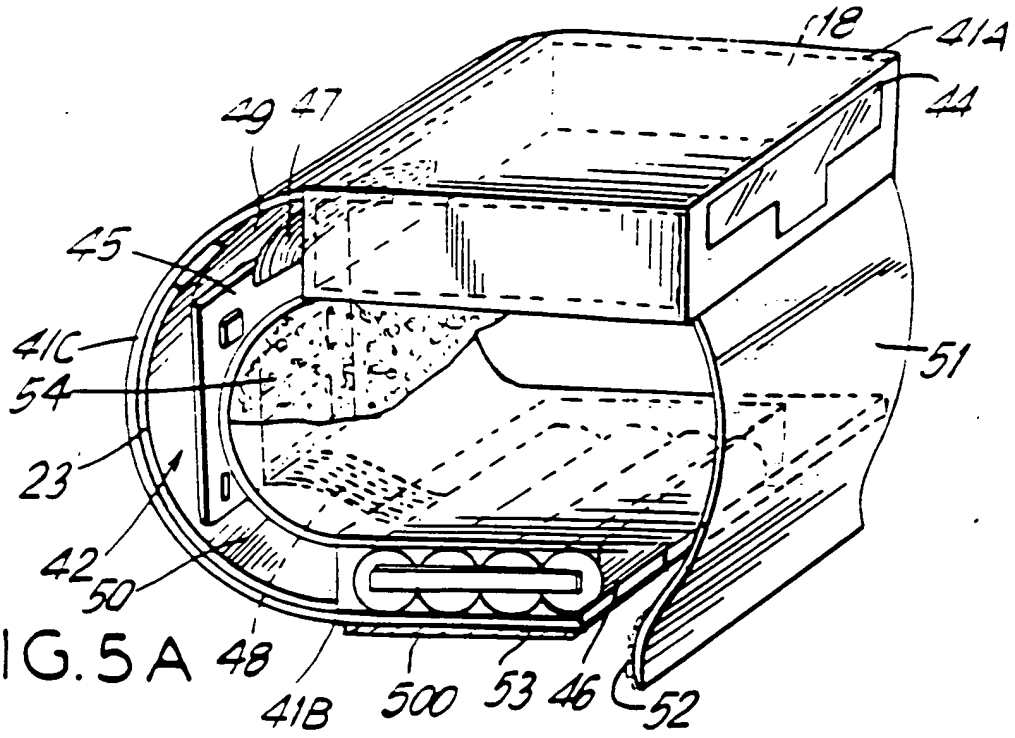

18
41A
44
49
47
45
41C
54
51
23
42
50
48
41B
500
53
46
52

FIG. 5A

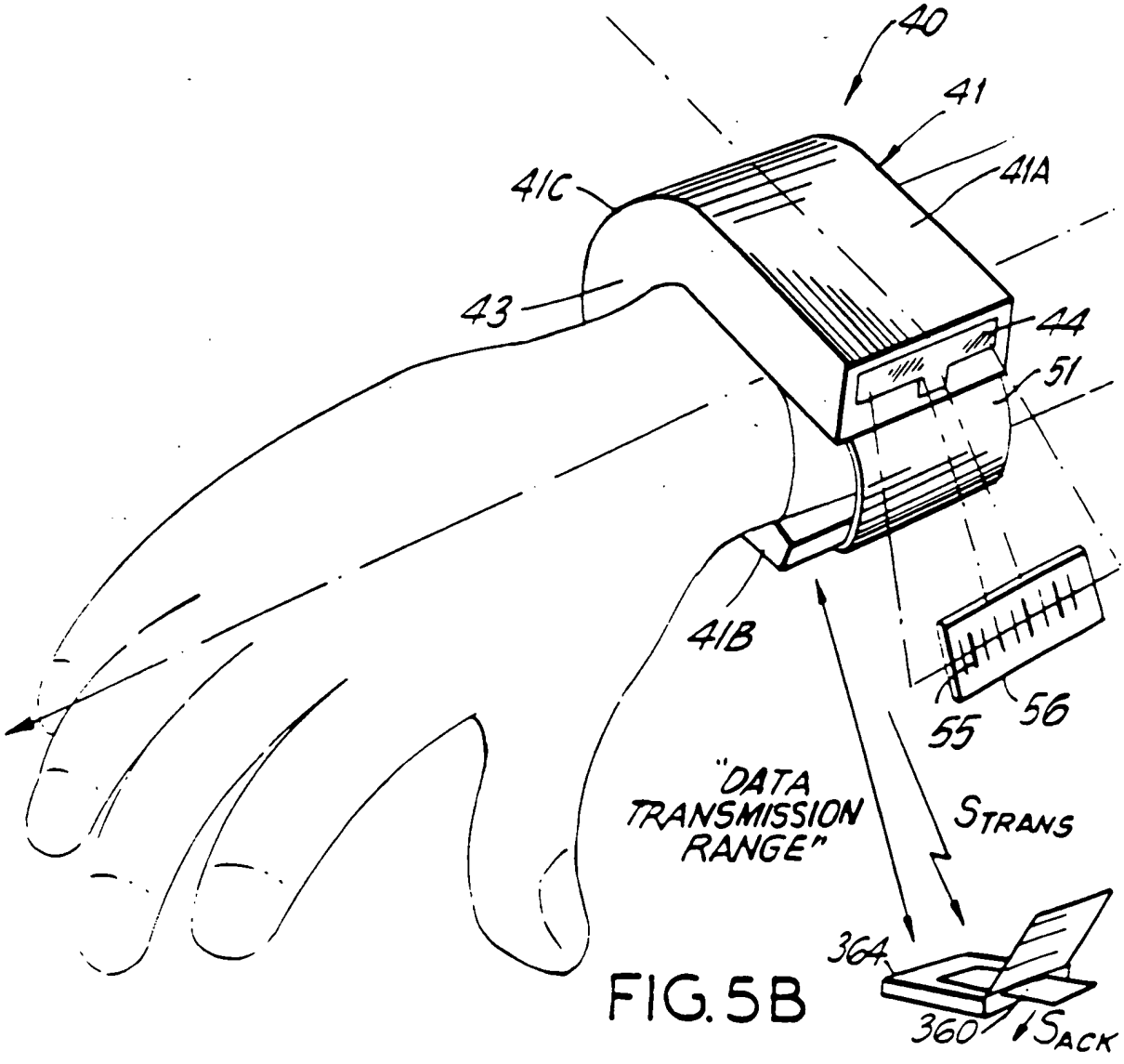

40
41
41A
41C
43
44
51
41B
55
56
"DATA TRANSMISSION RANGE"
STRANS
364
360
SACK

FIG. 5B

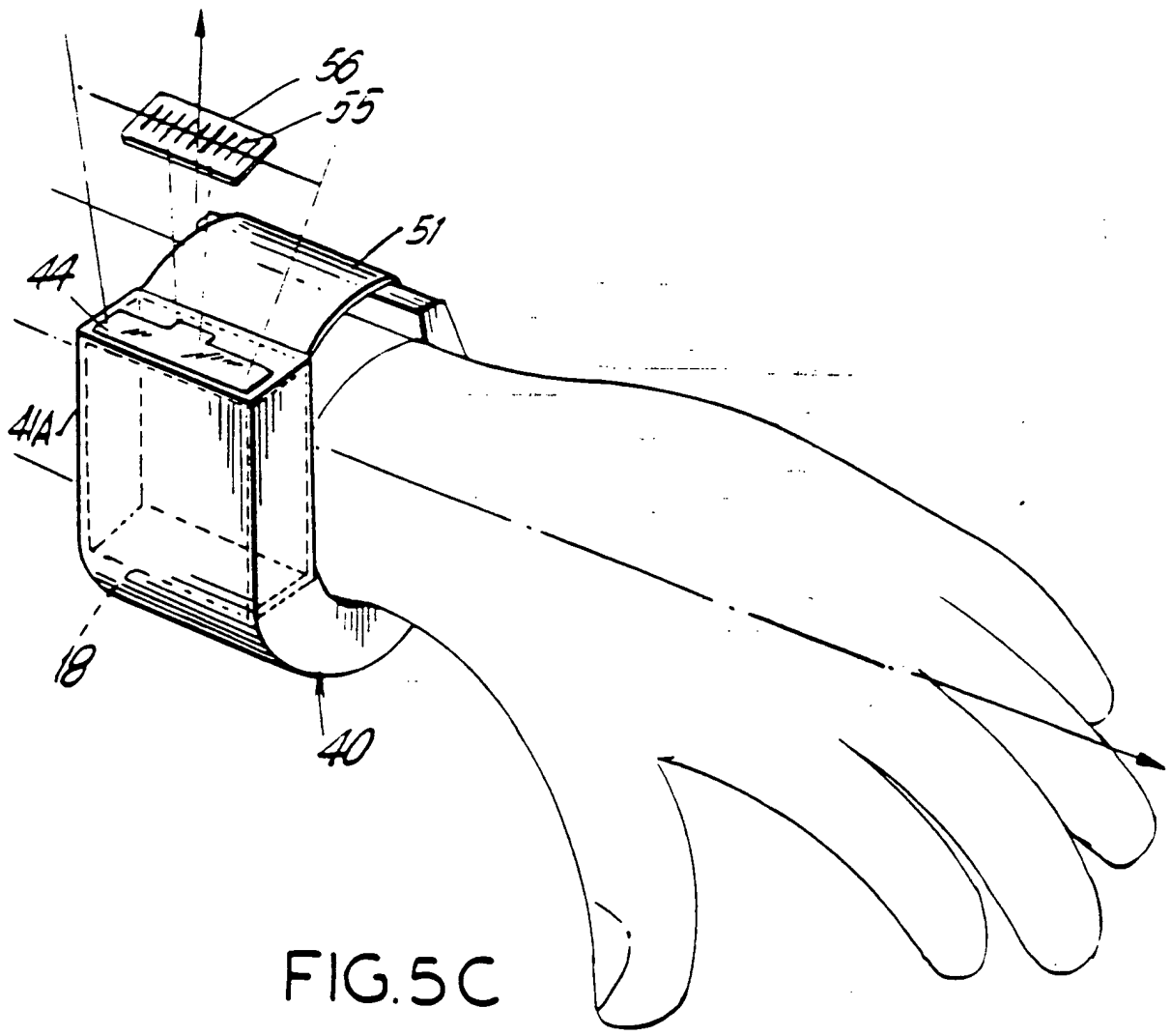


FIG. 5C

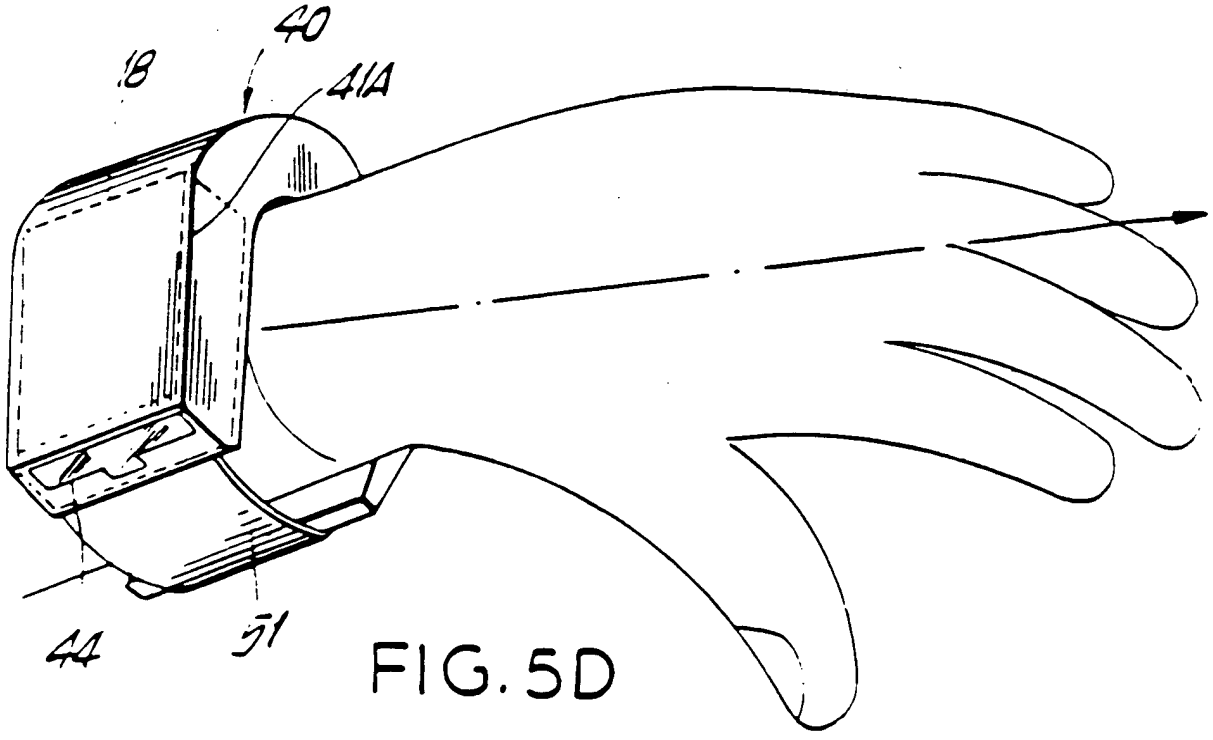


FIG. 5D

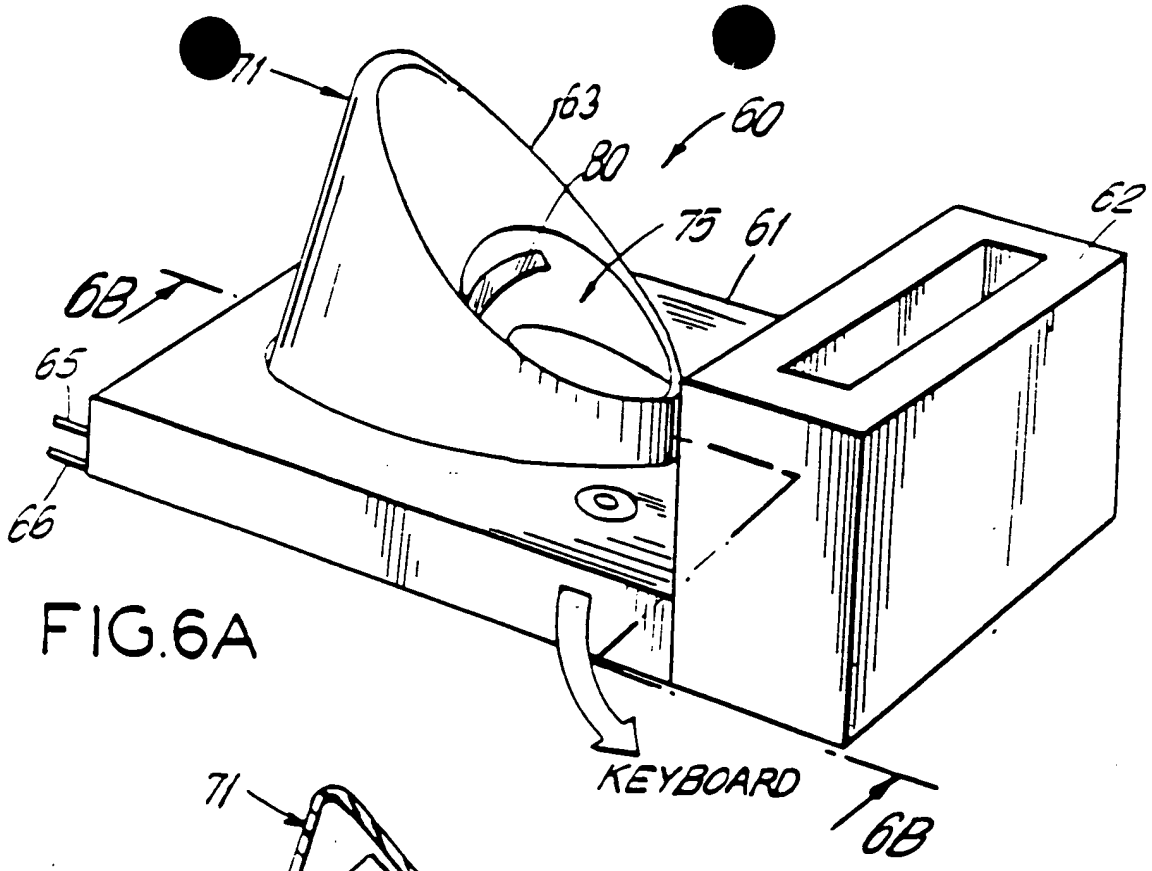


FIG.6A

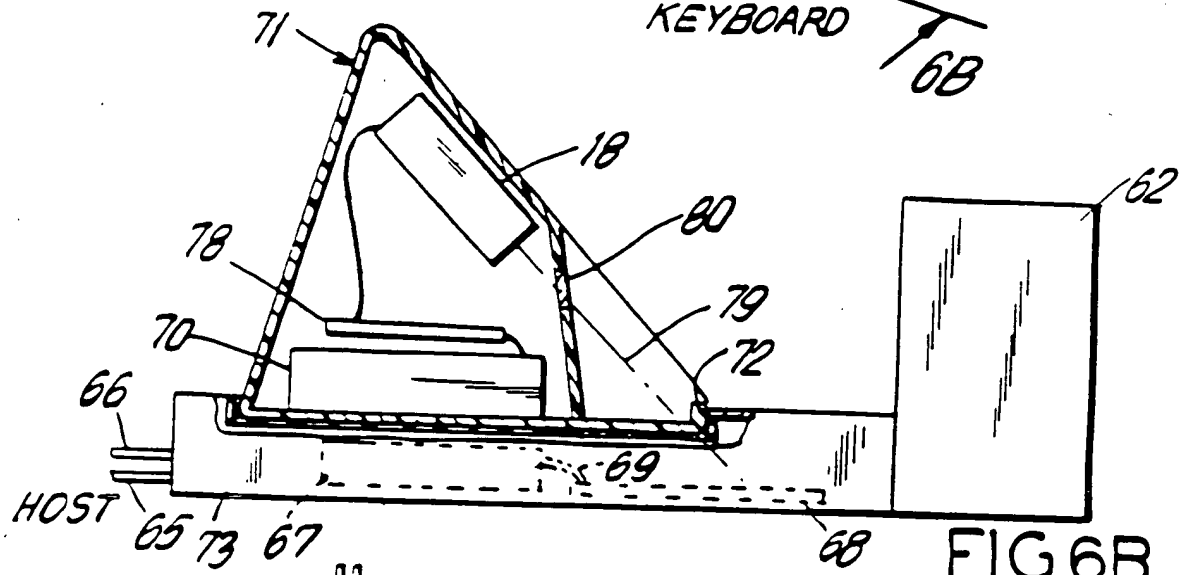


FIG.6B

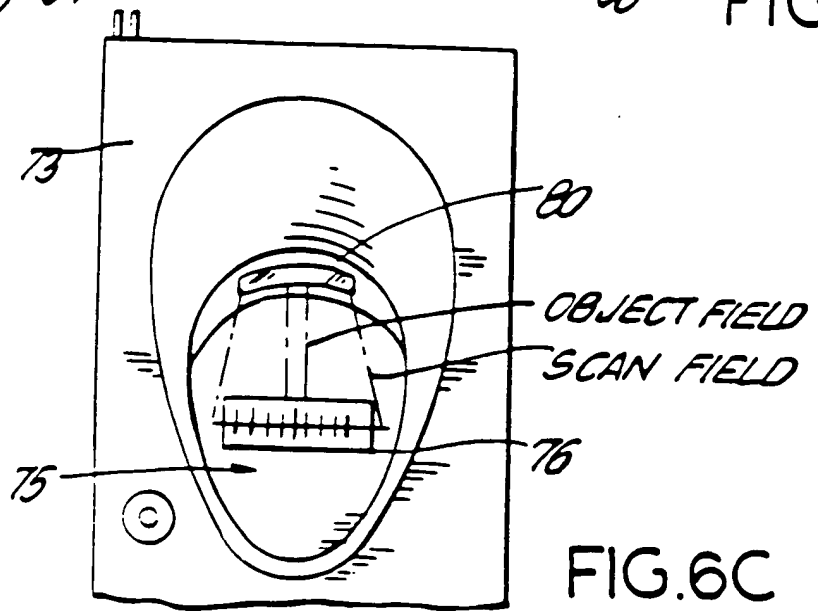


FIG.6C

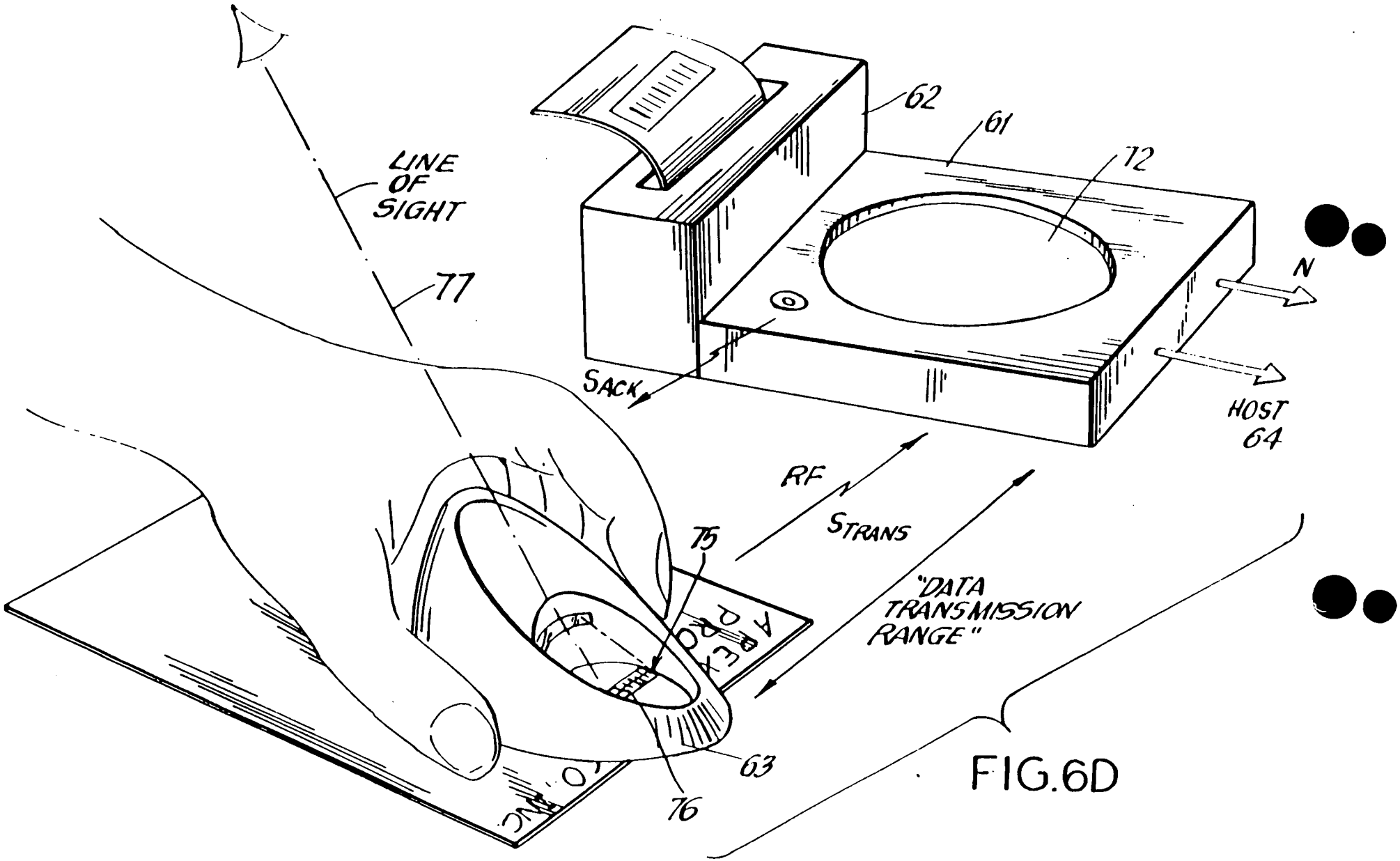

LINE OF SIGHT
77
62
61
72
N
SACK
HOST 64
RF
STRANS
75
"DATA TRANSMISSION RANGE"
63
76

FIG.6D

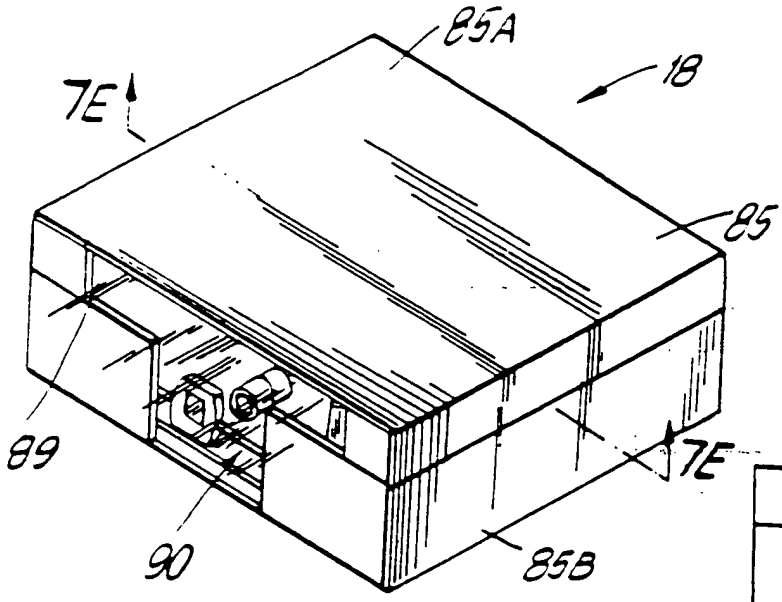


FIG.7A

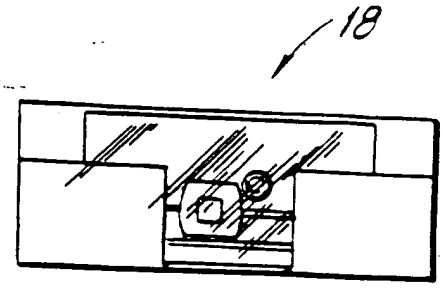


FIG.7B

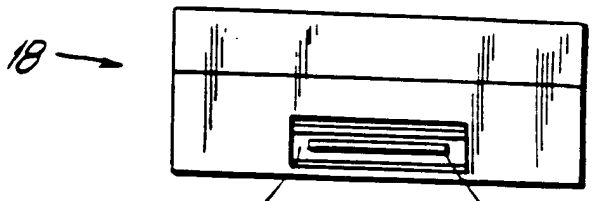


FIG.7C

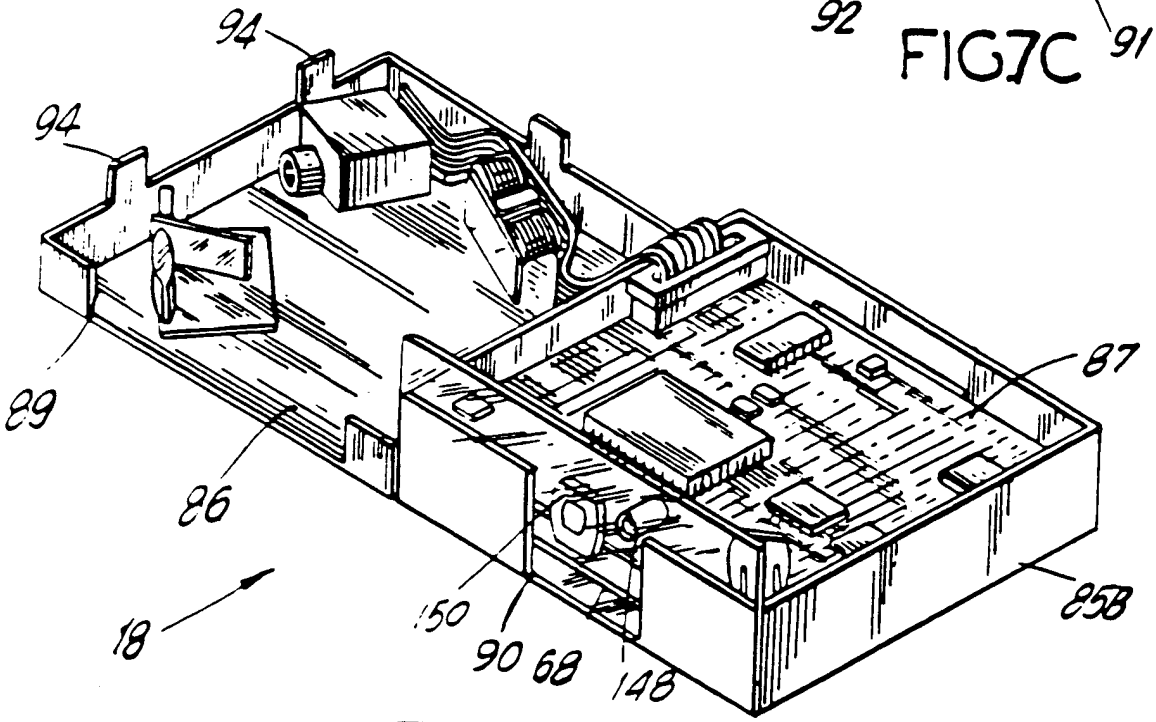


FIG.7D

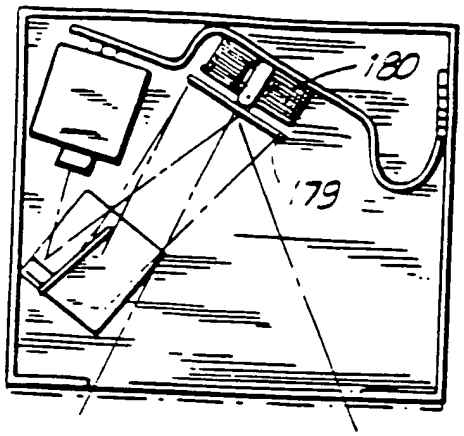

180
179

FIG.7E

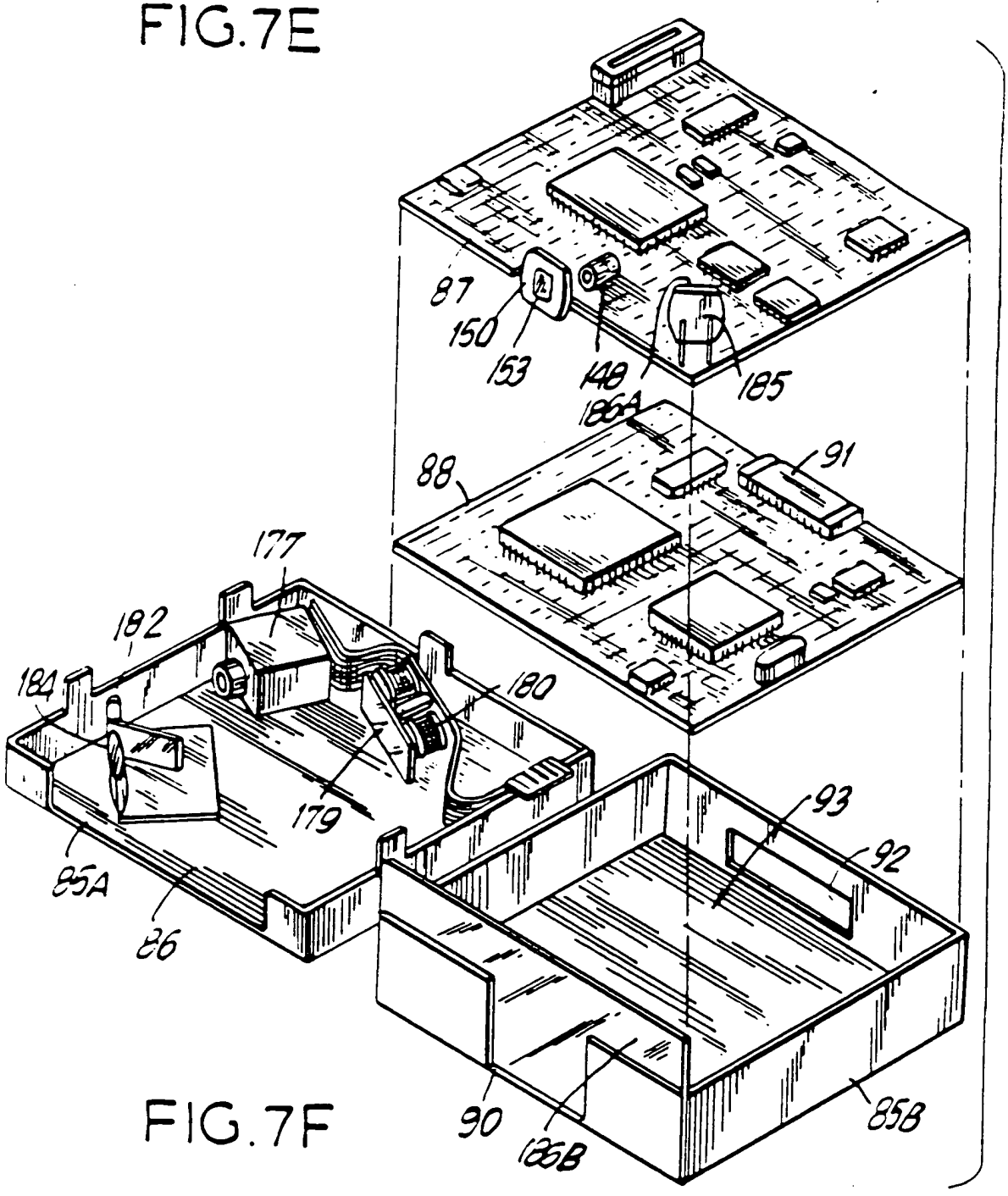

87
150
153
148
185
186A
88
91
177
182
184
180
179
93
92
85A
86
90
186B
85B

FIG.7F

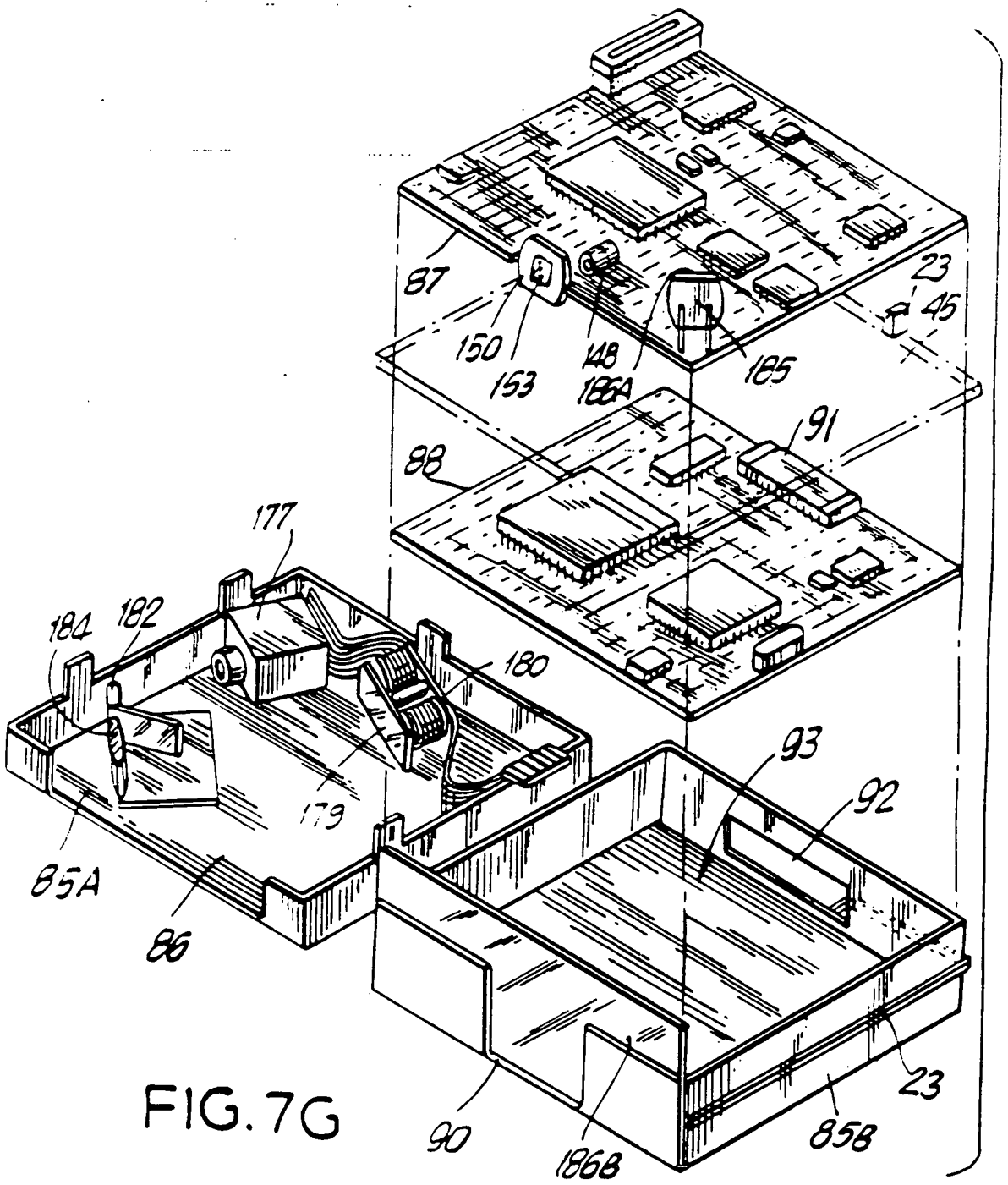

87
150
153
148
186A
185
23
45
91
88
177
184
182
180
179
85A
86
93
92
90
186B
85B
23

FIG. 7G

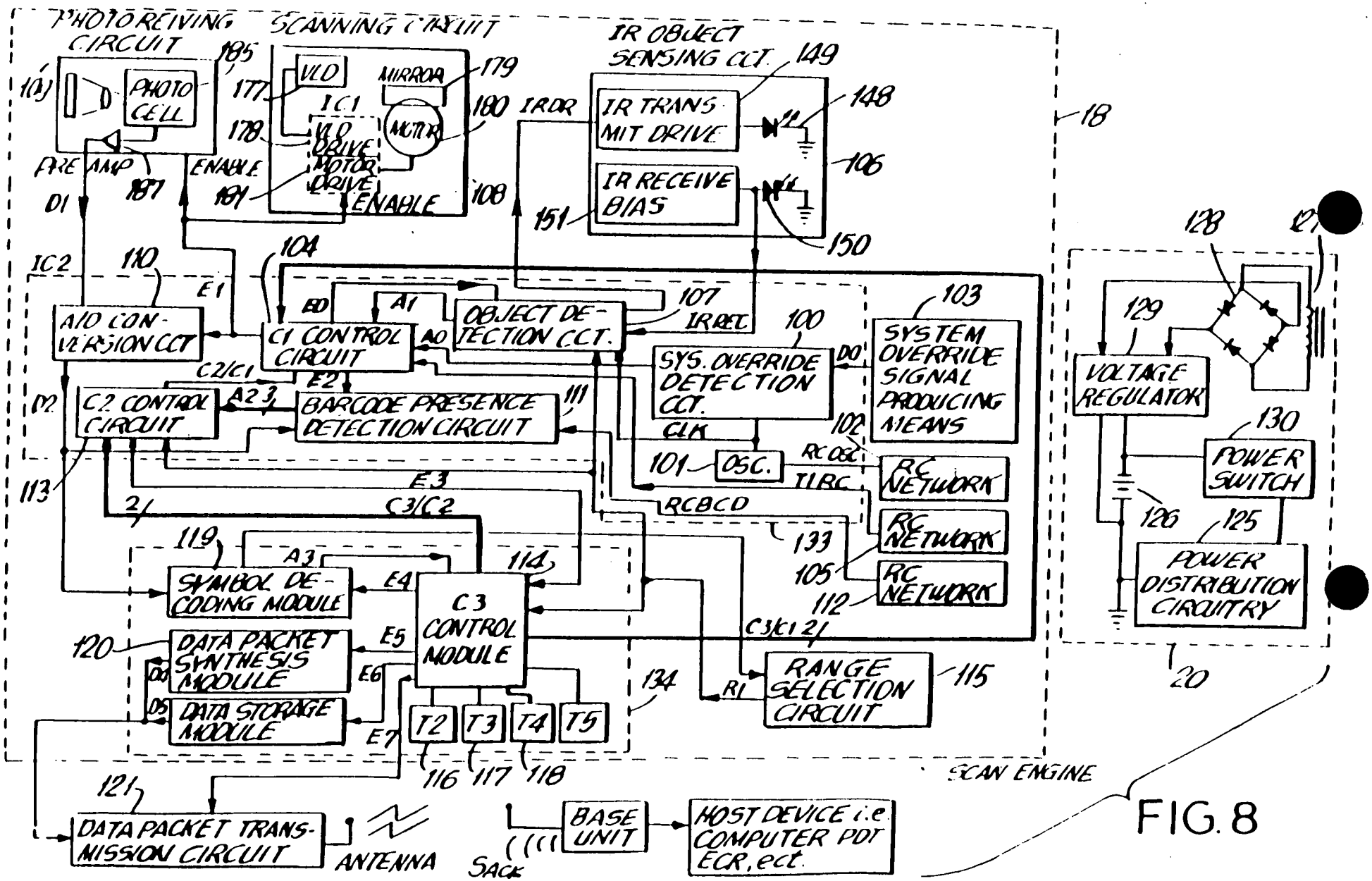


FIG. 8

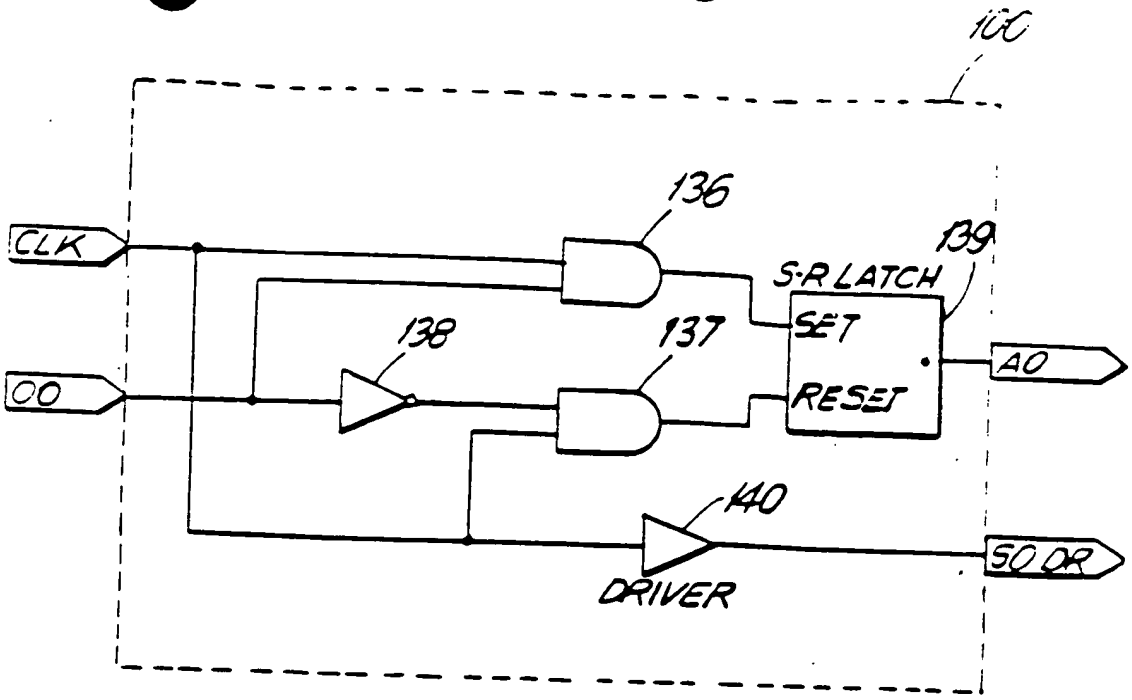

100
136
CLK
139
S-R LATCH
SET
138
137
A0
00
RESET
140
50 OR
DRIVER

FIG. 8A

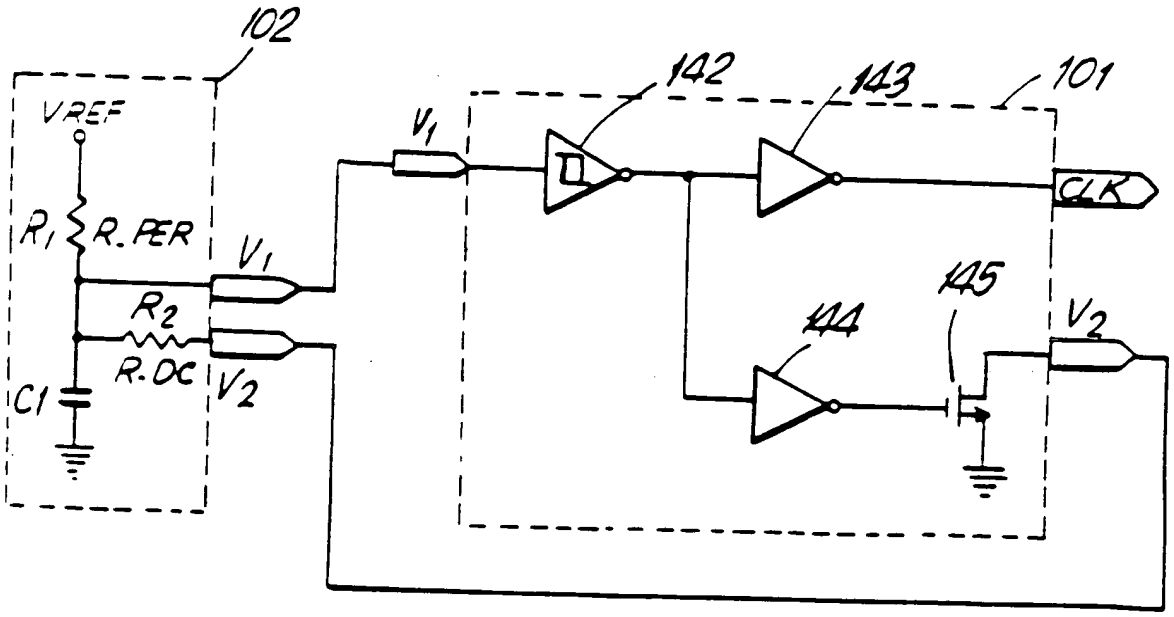

102
142
143
101
VREF
V1
CLK
R1
R. PER
V1
145
R2
144
V2
R. OC
C1
V2

FIG. 8B

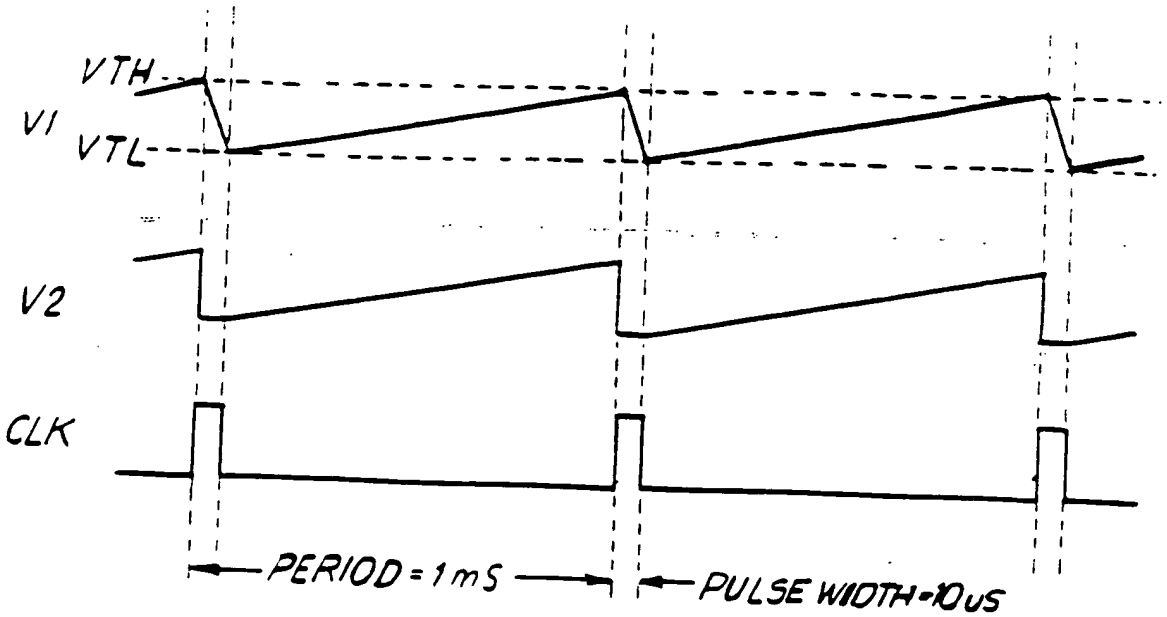

VTH
VI
VTL
V2
CLK
PERIOD = 1mS
PULSE WIDTH = 10uS

FIG.8C

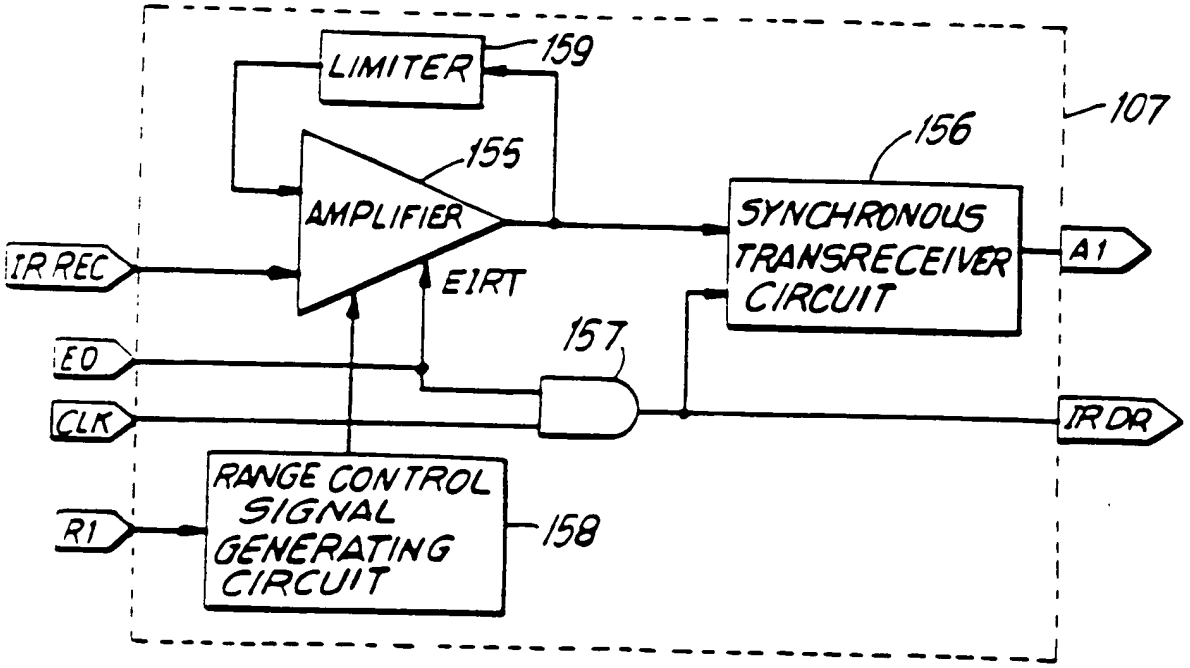

LIMITER
159
107
156
155
AMPLIFIER
SYNCHRONOUS TRANSRECEIVER CIRCUIT
A1
IR REC
E1RT
157
E0
CLK
IR DR
RANGE CONTROL SIGNAL GENERATING CIRCUIT
158
R1

FIG.8D

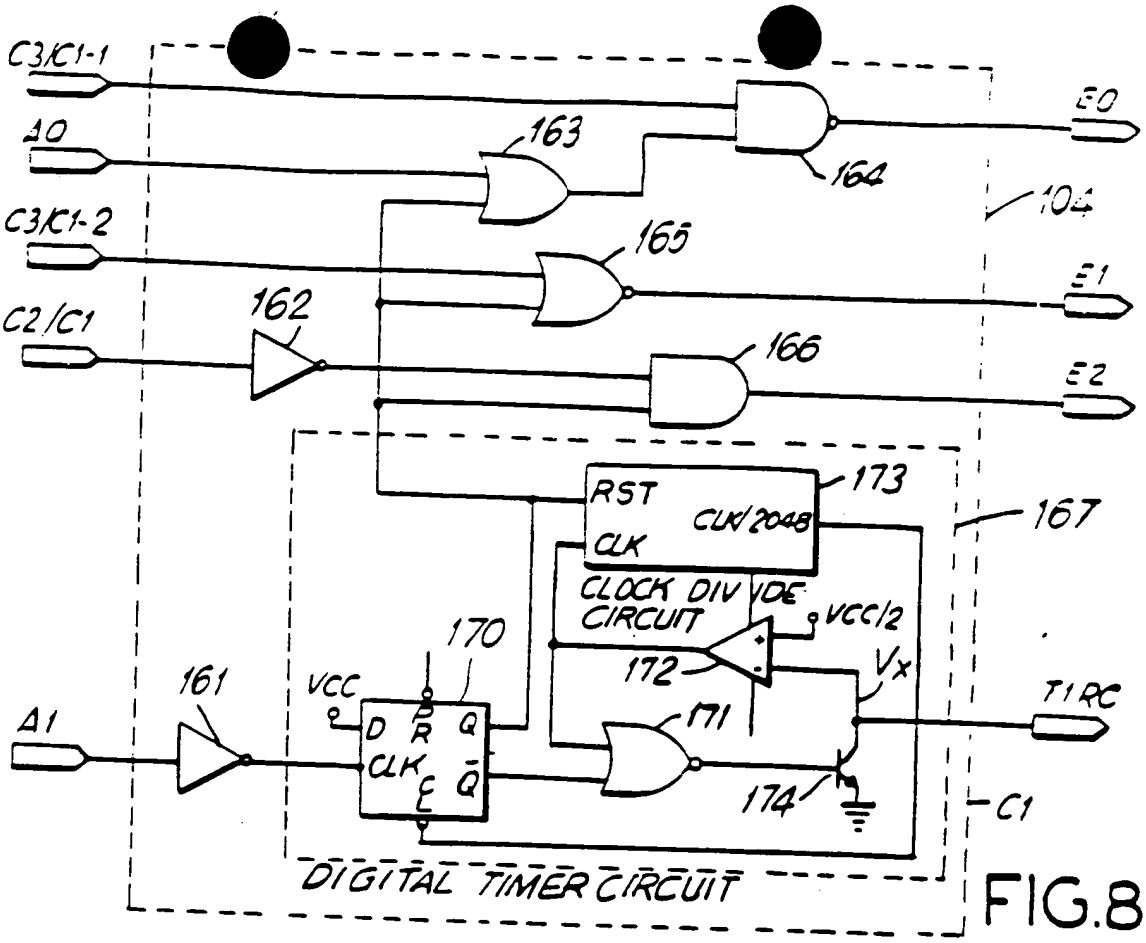

C3/C1-1
A0
C3/C1-2
C2/C1
A1
163
164
165
162
166
161
170
171
172
173
174
104
167
C1
E0
E1
E2
T1RC
RST
CLK
CLK/2048
CLOCK DIV CIRCUIT
VDE
VCC/2
Vx
VCC
D
R
Q
CLK
DIGITAL TIMER CIRCUIT

FIG.8E

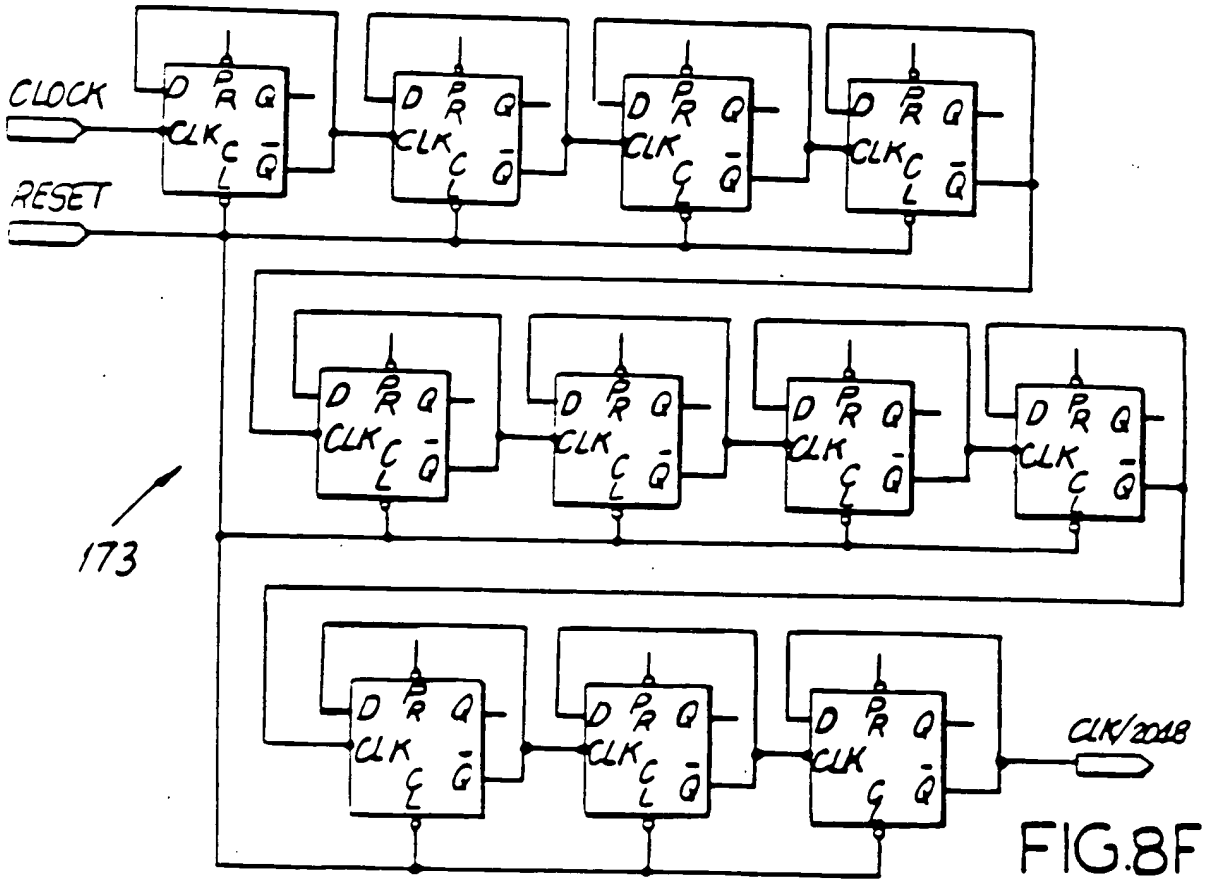

CLOCK
RESET
173
D
R
Q
CLK
CLK/2048

FIG.8F

$$E_0 = \overline{(B + A_0)(C_3 / C_2 - 1)}$$
$$E_1 = (C_3 / C_2 - 2) + B$$
$$E_2 = (C_2 / C_1)(T_1)$$

FIG.8G

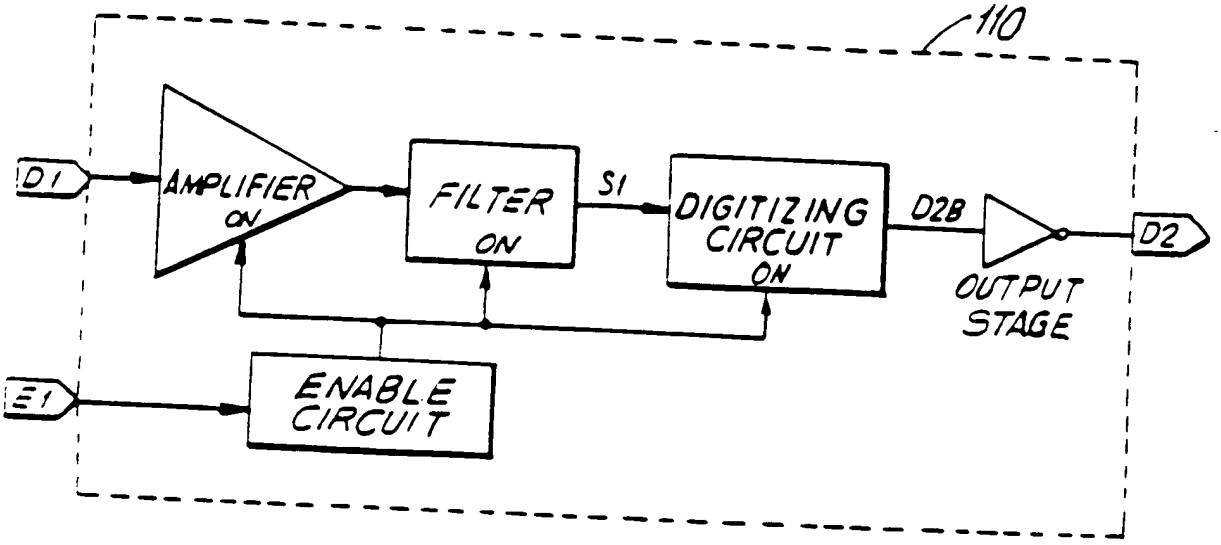


FIG.8H

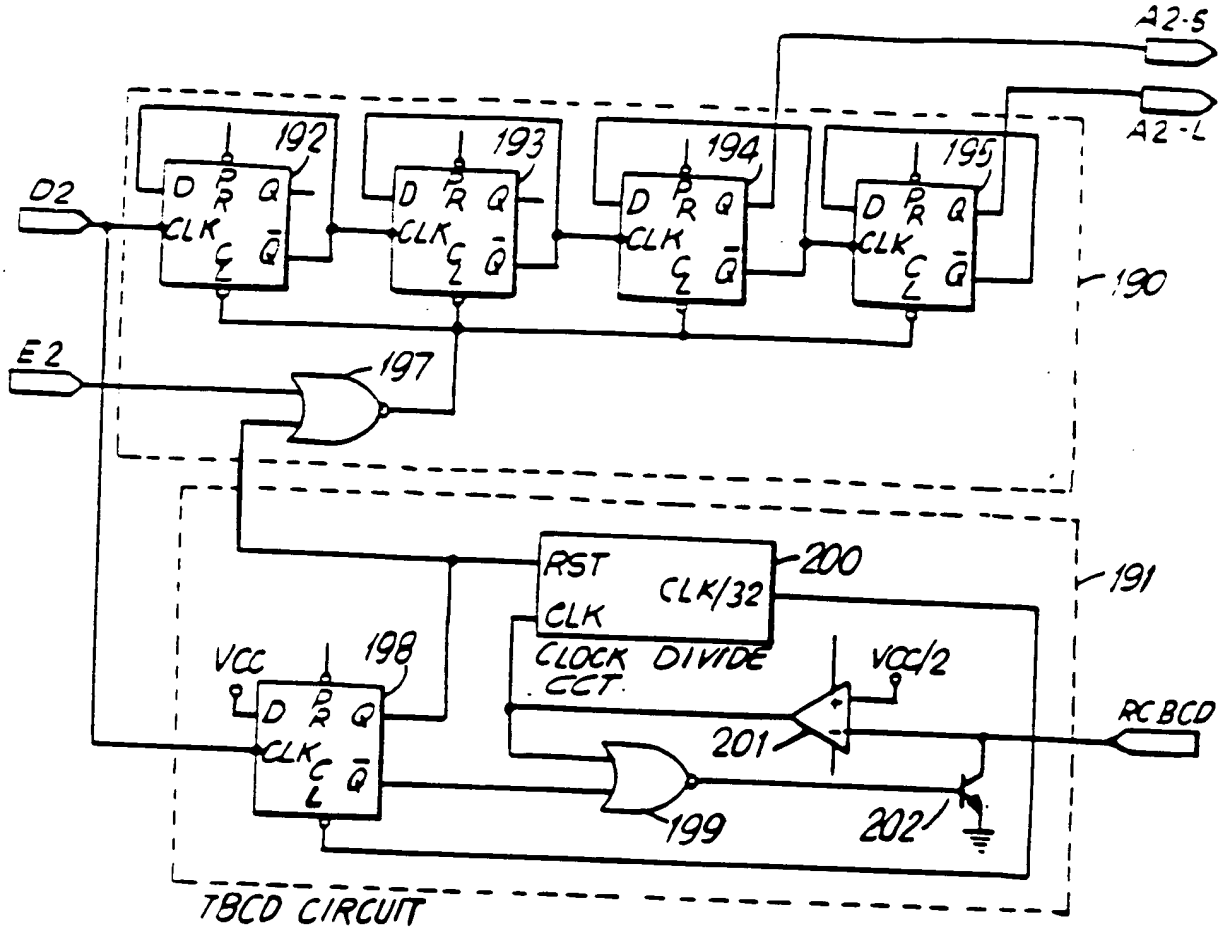

A2-S
A2-L
D2
E2
192
193
194
195
190
197
RST
CLK
CLK/32
200
191
CLOCK DIVIDE CCT.
VCC
198
VCC/2
201
RC BCD
199
202
TBCD CIRCUIT

FIG.8I

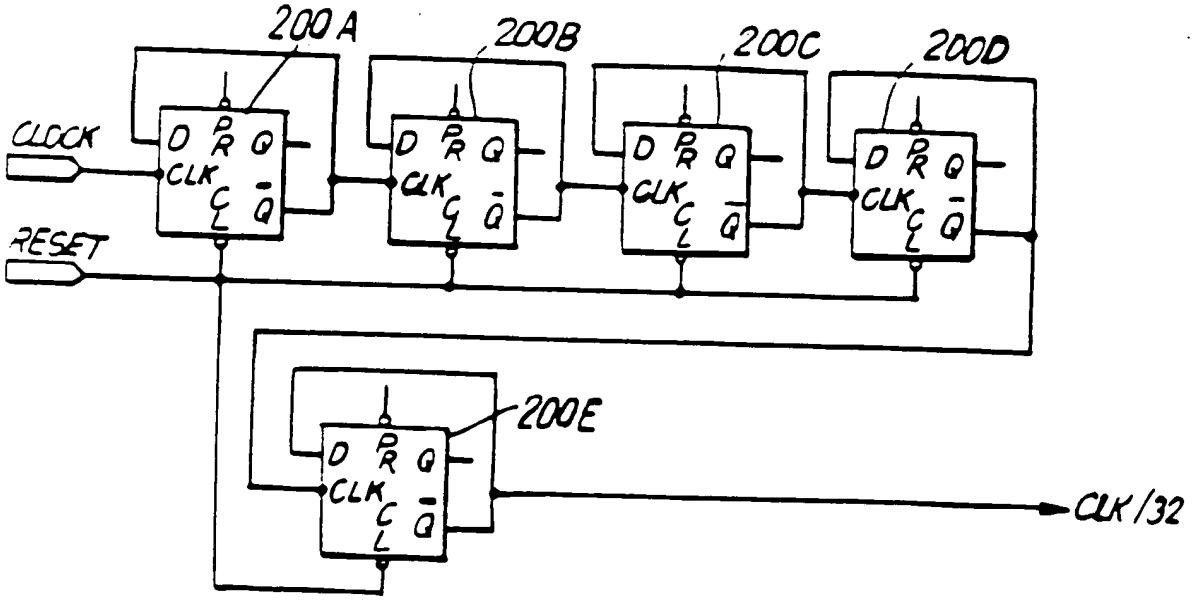

200A
200B
200C
200D
CLOCK
RESET
200E
CLK/32

FIG.8J

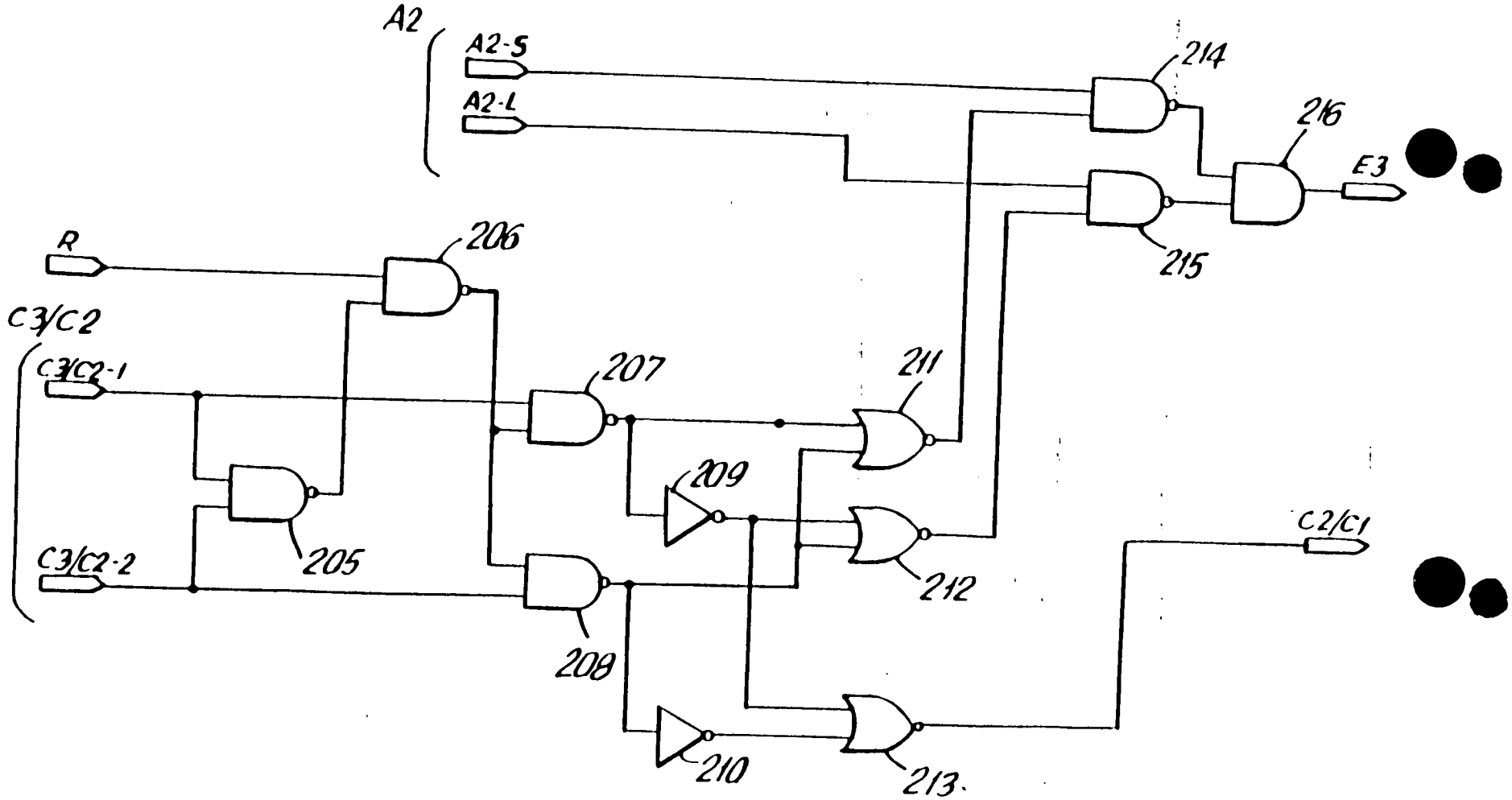

A2
A2-S
A2-L
214
216
E3
215
R
206
C3/C2
C3/C2-1
207
211
209
205
C3/C2-2
C2/C1
212
208
210
213

FIG. 8L

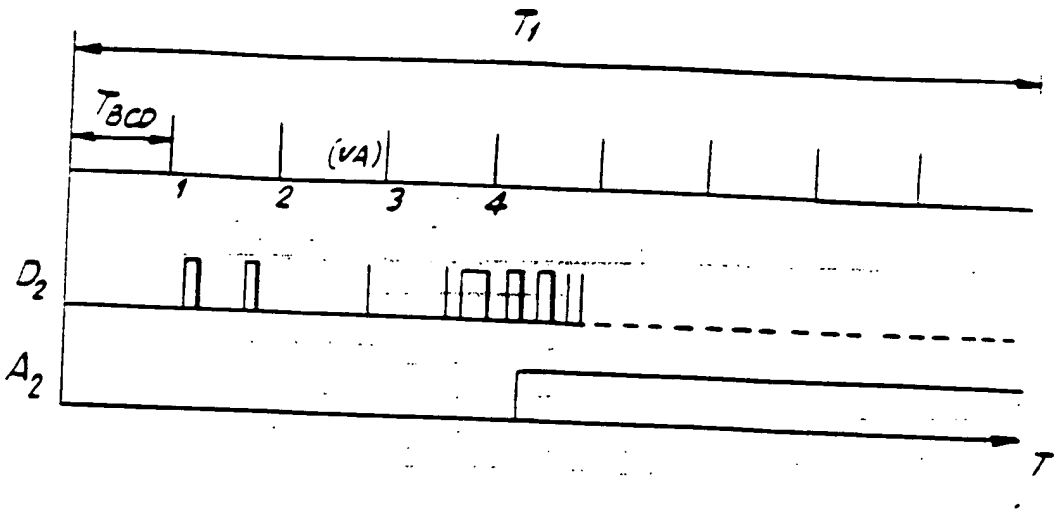


FIG. 8K

R	C_3/C_2 -1	C_3/C_2 -2	E_3	C_2/C_1
0	X	X	A_{2L}	0
1	0	0	A_{2L}	0
1	0	1	A_{2S}	0
X	1	1	X	1
	X = DON'T CARE			

FIG. 8M

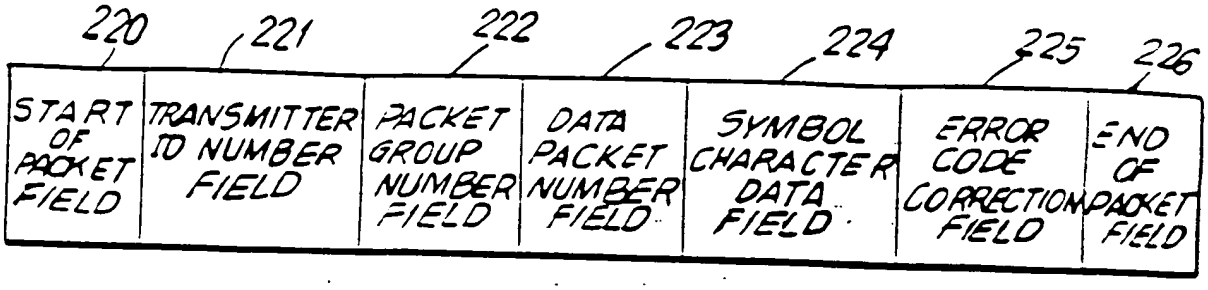

220
221
222
223
224
225
226
START OF PACKET FIELD
TRANSMITTER ID NUMBER FIELD
PACKET GROUP NUMBER FIELD
DATA PACKET NUMBER FIELD
SYMBOL CHARACTER DATA FIELD
ERROR CODE CORRECTION FIELD
END OF PACKET FIELD

FIG.8N

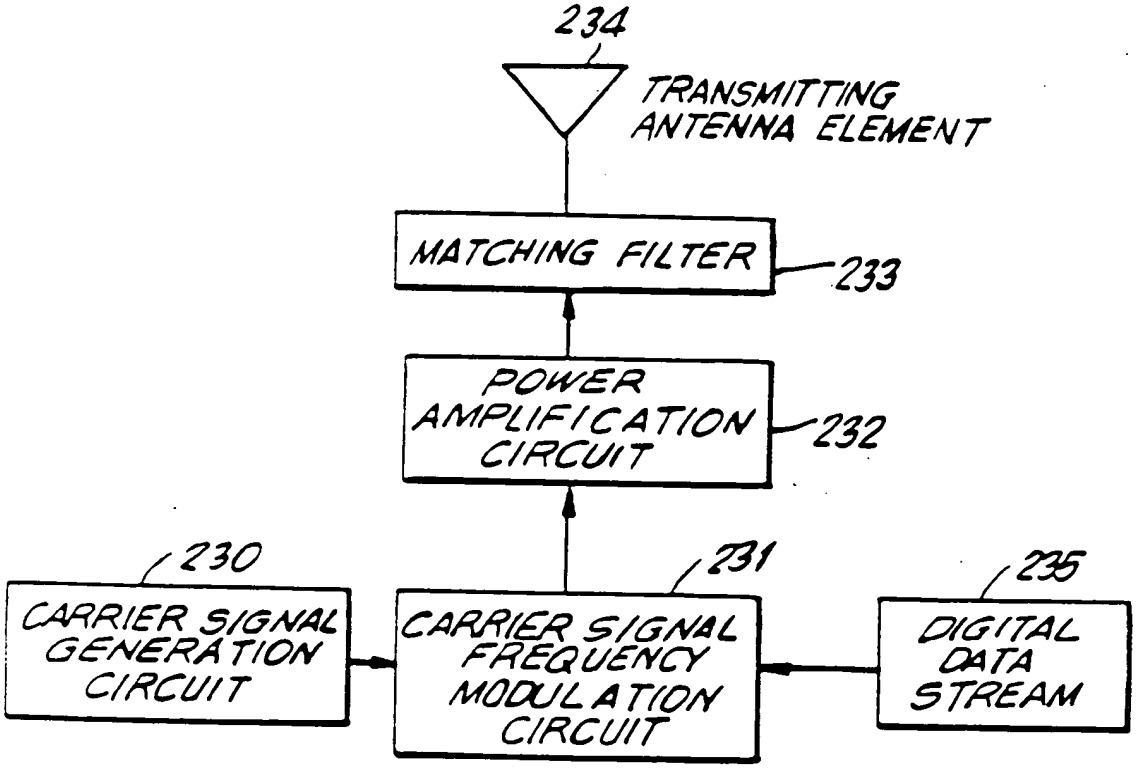

234
TRANSMITTING ANTENNA ELEMENT
MATCHING FILTER
233
POWER AMPLIFICATION CIRCUIT
232
230
231
235
CARRIER SIGNAL GENERATION CIRCUIT
CARRIER SIGNAL FREQUENCY MODULATION CIRCUIT
DIGITAL DATA STREAM

FIG.9

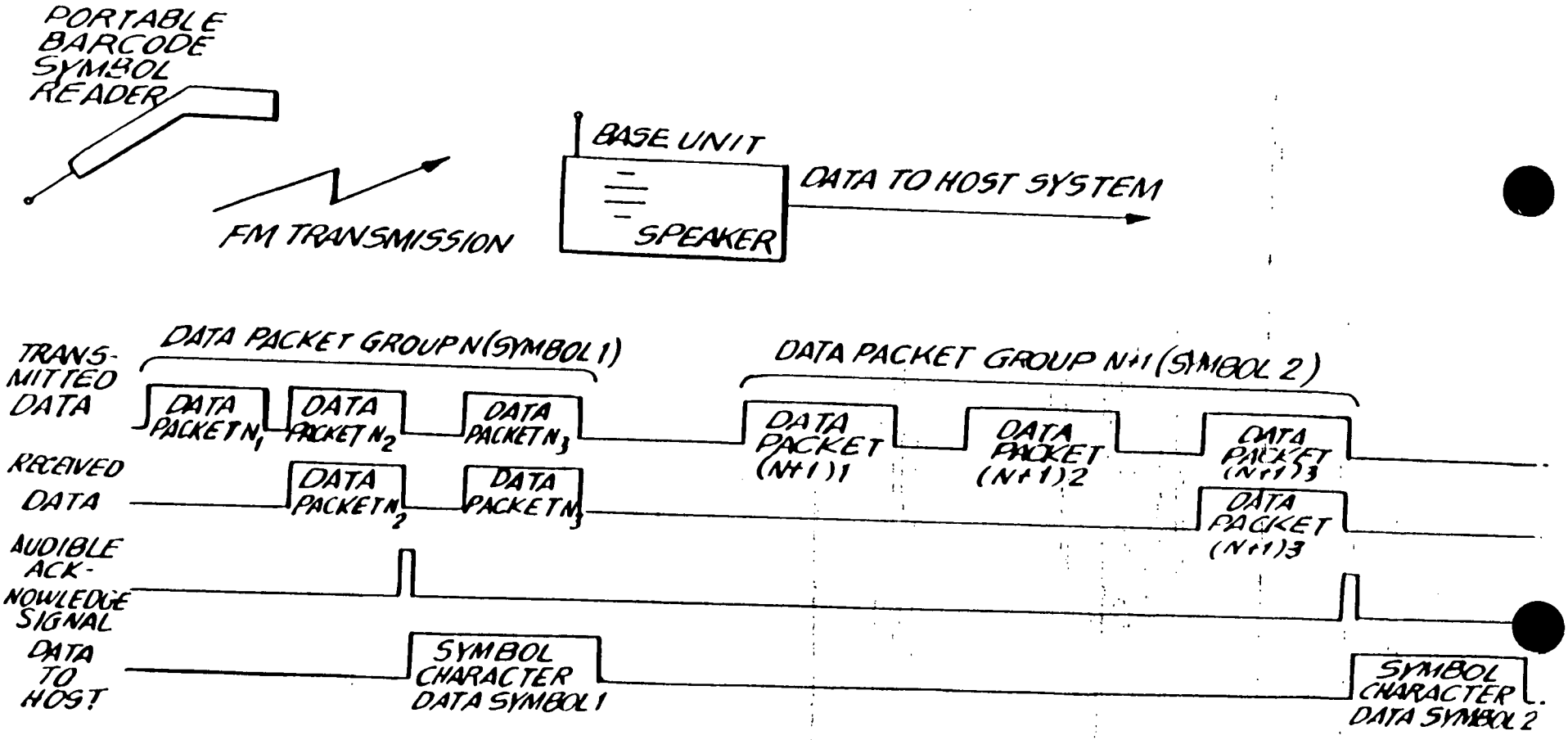


FIG. 10

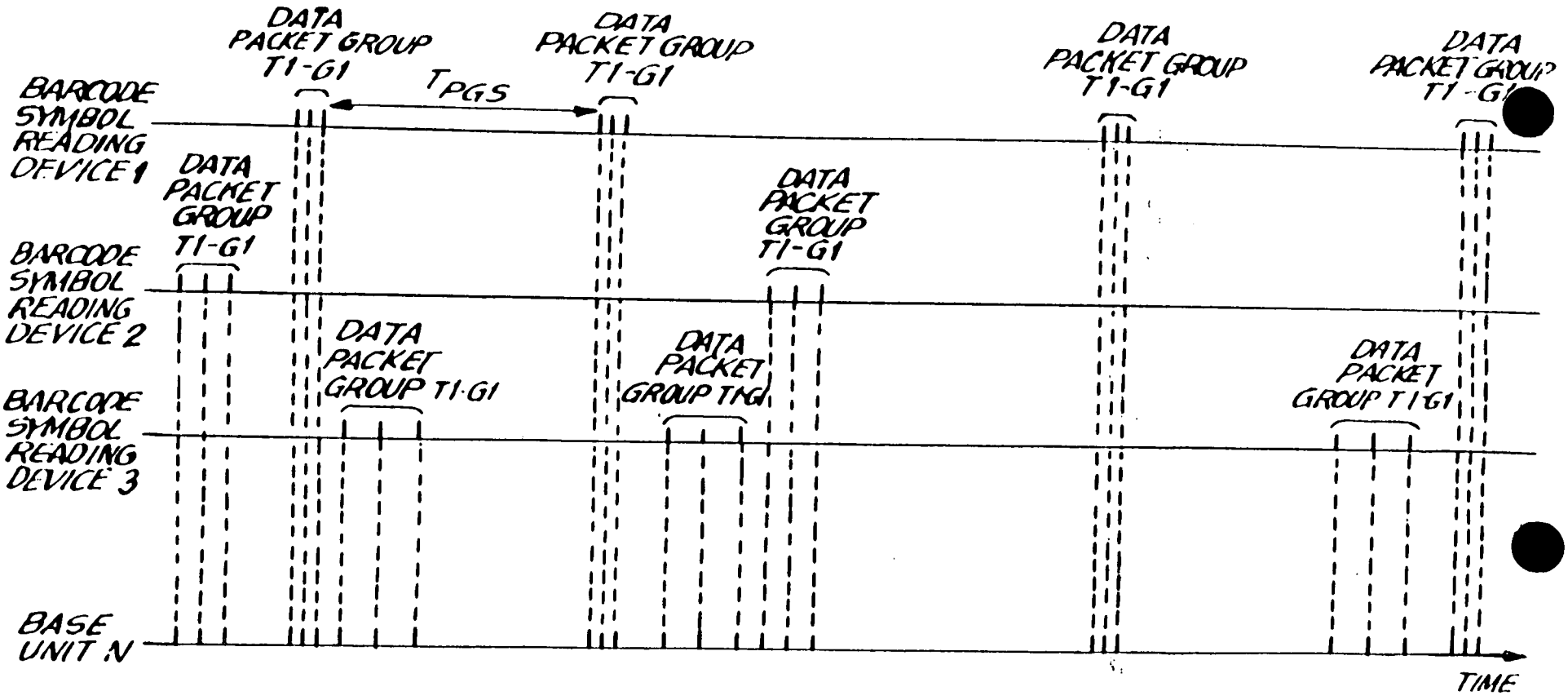

DATA PACKET GROUP T1-G1
T_{PGS}
DATA PACKET GROUP T1-G1
DATA PACKET GROUP T1-G1
DATA PACKET GROUP T1-G1
BARCODE SYMBOL READING DEVICE 1
DATA PACKET GROUP T1-G1
DATA PACKET GROUP T1-G1
BARCODE SYMBOL READING DEVICE 2
DATA PACKET GROUP T1-G1
DATA PACKET GROUP T1-G1
DATA PACKET GROUP T1-G1
BARCODE SYMBOL READING DEVICE 3
BASE UNIT N
TIME

FIG. 11

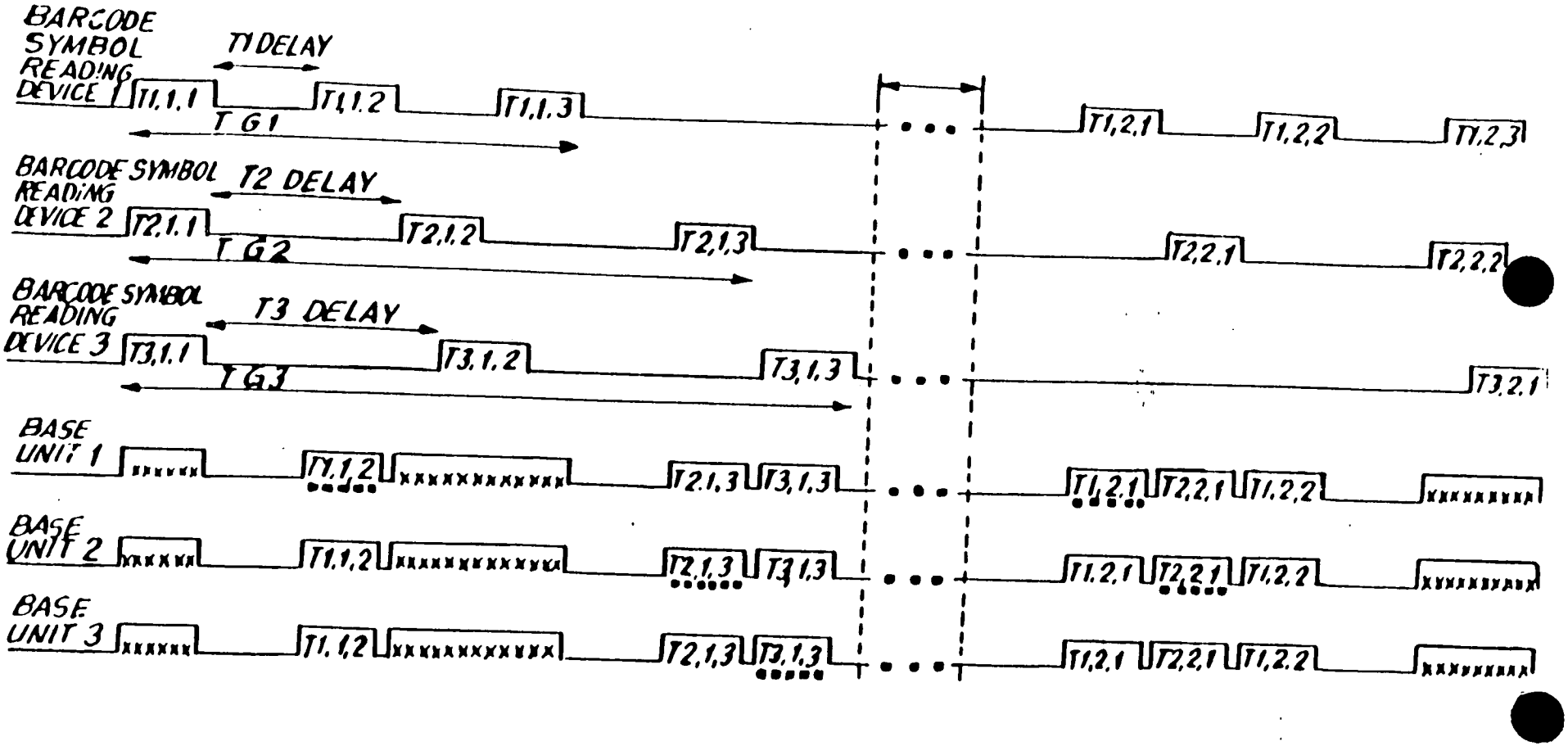


FIG. 12

DATA PACKET NOTATION:
TRANSMITTER #, GROUP #, TRANSMITTERS #
xxx DENOTES INTERFERENCE FROM MULTIPLE TRANSMITTERS
..... DENOTES DATA THAT WILL PRODUCE ACKNOWLEDGE

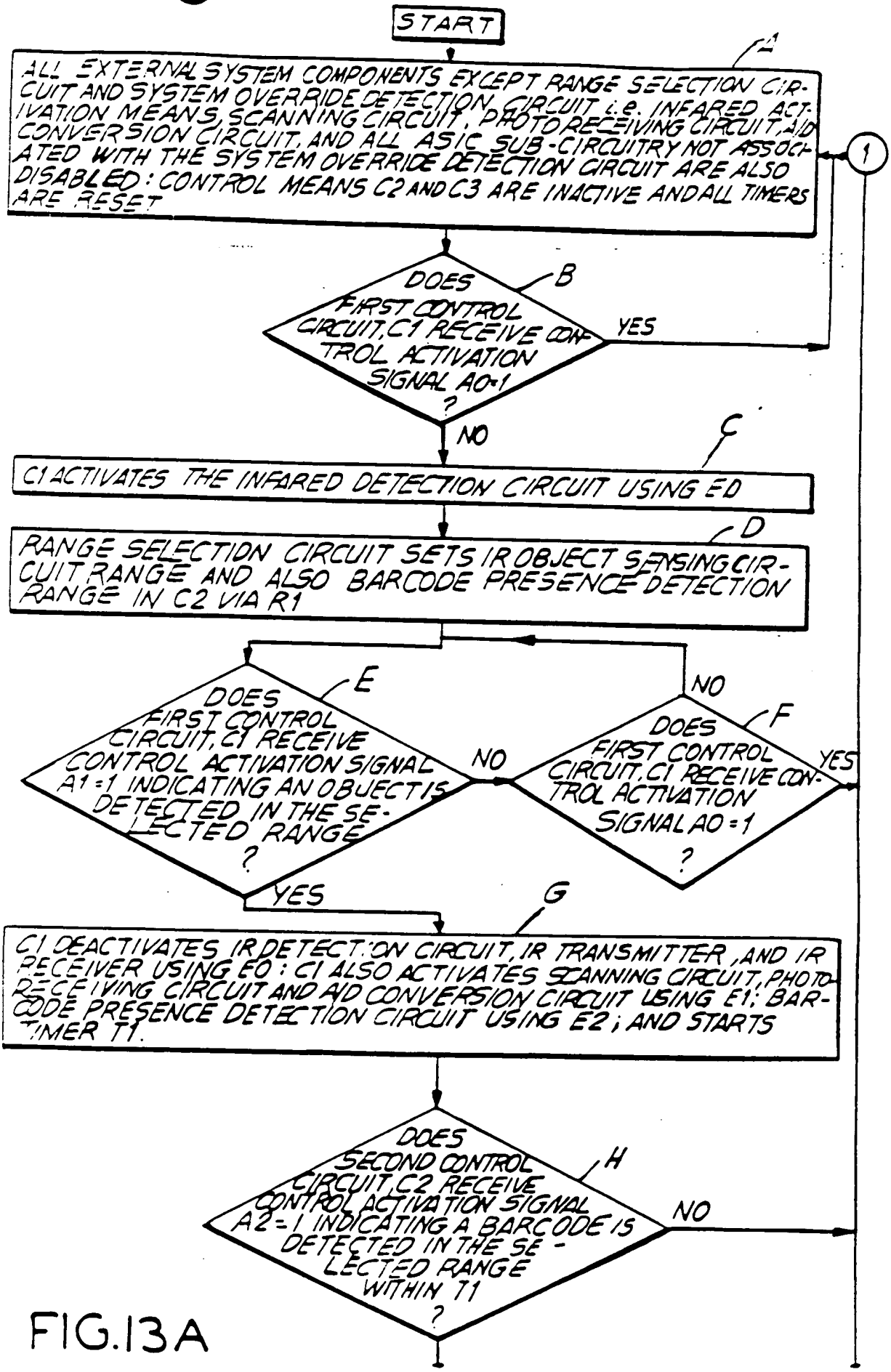

START
A
ALL EXTERNAL SYSTEM COMPONENTS EXCEPT RANGE SELECTION CIRCUIT AND SYSTEM OVERRIDE DETECTION CIRCUIT i.e. INFARED ACTIVATION MEANS, SCANNING CIRCUIT, PHOTO RECEIVING CIRCUIT, A/D CONVERSION CIRCUIT, AND ALL ASIC SUB-CIRCUITRY NOT ASSOCIATED WITH THE SYSTEM OVERRIDE DETECTION CIRCUIT ARE ALSO DISABLED: CONTROL MEANS C2 AND C3 ARE INACTIVE AND ALL TIMERS ARE RESET
1
B
DOES FIRST CONTROL CIRCUIT, C1 RECEIVE CONTROL ACTIVATION SIGNAL A0=1 ?
YES
NO
C
C1 ACTIVATES THE INFARED DETECTION CIRCUIT USING E0
D
RANGE SELECTION CIRCUIT SETS IR OBJECT SENSING CIRCUIT RANGE AND ALSO BARCODE PRESENCE DETECTION RANGE IN C2 VIA R1
E
DOES FIRST CONTROL CIRCUIT, C1 RECEIVE CONTROL ACTIVATION SIGNAL A1=1 INDICATING AN OBJECT IS DETECTED IN THE SELECTED RANGE ?
NO
F
DOES FIRST CONTROL CIRCUIT, C1 RECEIVE CONTROL ACTIVATION SIGNAL A0=1 ?
YES
NO
YES
G
C1 DEACTIVATES IR DETECTION CIRCUIT, IR TRANSMITTER, AND IR RECEIVER USING E0; C1 ALSO ACTIVATES SCANNING CIRCUIT, PHOTO RECEIVING CIRCUIT AND A/D CONVERSION CIRCUIT USING E1; BARCODE PRESENCE DETECTION CIRCUIT USING E2; AND STARTS TIMER T1.
H
DOES SECOND CONTROL CIRCUIT, C2 RECEIVE CONTROL ACTIVATION SIGNAL A2=1 INDICATING A BARCODE IS DETECTED IN THE SELECTED RANGE WITHIN T1 ?
NO

FIG.13A

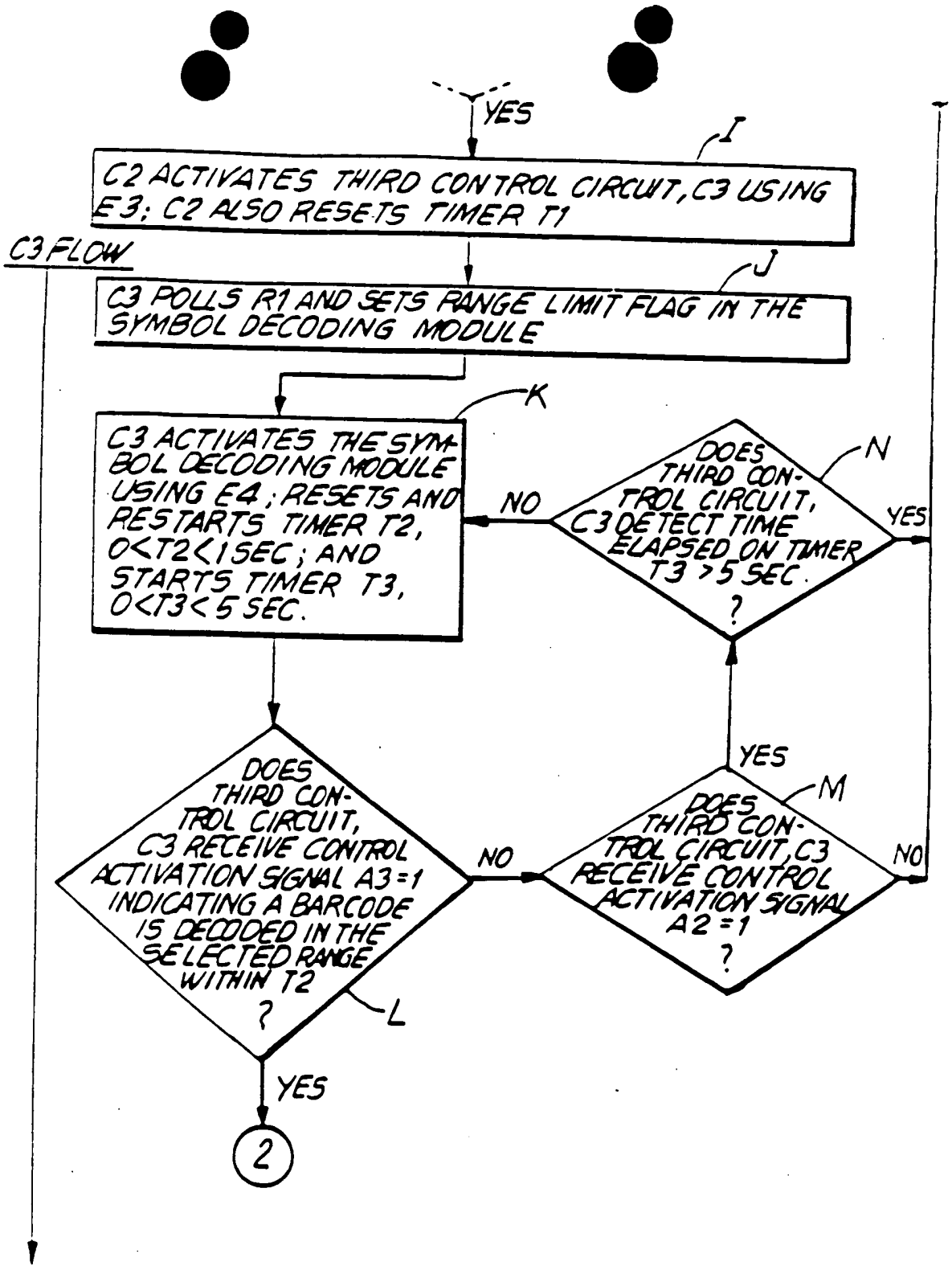

YES
I
C2 ACTIVATES THIRD CONTROL CIRCUIT, C3 USING E3; C2 ALSO RESETS TIMER T1
C3 FLOW
J
C3 POLLS R1 AND SETS RANGE LIMIT FLAG IN THE SYMBOL DECODING MODULE
K
C3 ACTIVATES THE SYMBOL DECODING MODULE USING E4; RESETS AND RESTARTS TIMER T2, 0<T2<1SEC; AND STARTS TIMER T3, 0<T3<5 SEC.
N
DOES THIRD CONTROL CIRCUIT, C3 DETECT TIME ELAPSED ON TIMER T3 >5 SEC. ?
NO
YES
M
DOES THIRD CONTROL CIRCUIT, C3 RECEIVE CONTROL ACTIVATION SIGNAL A2 =1 ?
YES
NO
DOES THIRD CONTROL CIRCUIT, C3 RECEIVE CONTROL ACTIVATION SIGNAL A3 =1 INDICATING A BARCODE IS DECODED IN THE SELECTED RANGE WITHIN T2 ?
L
NO
YES
2

FIG.13AA

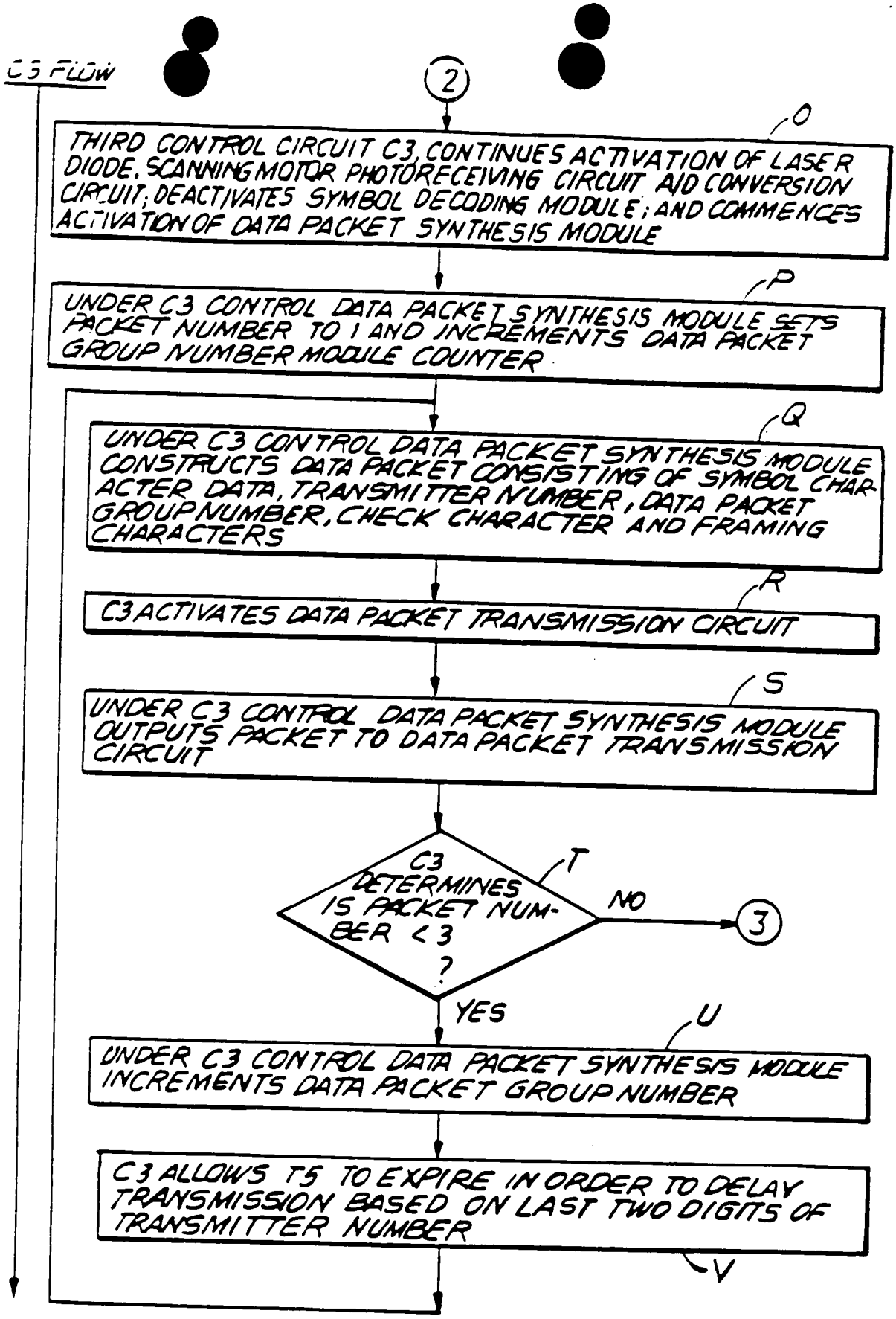

C3 FLOW
2
O
THIRD CONTROL CIRCUIT C3, CONTINUES ACTIVATION OF LASER DIODE, SCANNING MOTOR PHOTORECEIVING CIRCUIT AND CONVERSION CIRCUIT; DEACTIVATES SYMBOL DECODING MODULE; AND COMMENCES ACTIVATION OF DATA PACKET SYNTHESIS MODULE
P
UNDER C3 CONTROL DATA PACKET SYNTHESIS MODULE SETS PACKET NUMBER TO 1 AND INCREMENTS DATA PACKET GROUP NUMBER MODULE COUNTER
Q
UNDER C3 CONTROL DATA PACKET SYNTHESIS MODULE CONSTRUCTS DATA PACKET CONSISTING OF SYMBOL CHARACTER DATA, TRANSMITTER NUMBER, DATA PACKET GROUP NUMBER, CHECK CHARACTER AND FRAMING CHARACTERS
R
C3 ACTIVATES DATA PACKET TRANSMISSION CIRCUIT
S
UNDER C3 CONTROL DATA PACKET SYNTHESIS MODULE OUTPUTS PACKET TO DATA PACKET TRANSMISSION CIRCUIT
T
C3 DETERMINES IS PACKET NUMBER < 3 ?
NO
3
YES
U
UNDER C3 CONTROL DATA PACKET SYNTHESIS MODULE INCREMENTS DATA PACKET GROUP NUMBER
C3 ALLOWS T5 TO EXPIRE IN ORDER TO DELAY TRANSMISSION BASED ON LAST TWO DIGITS OF TRANSMITTER NUMBER
V

FIG. 13B

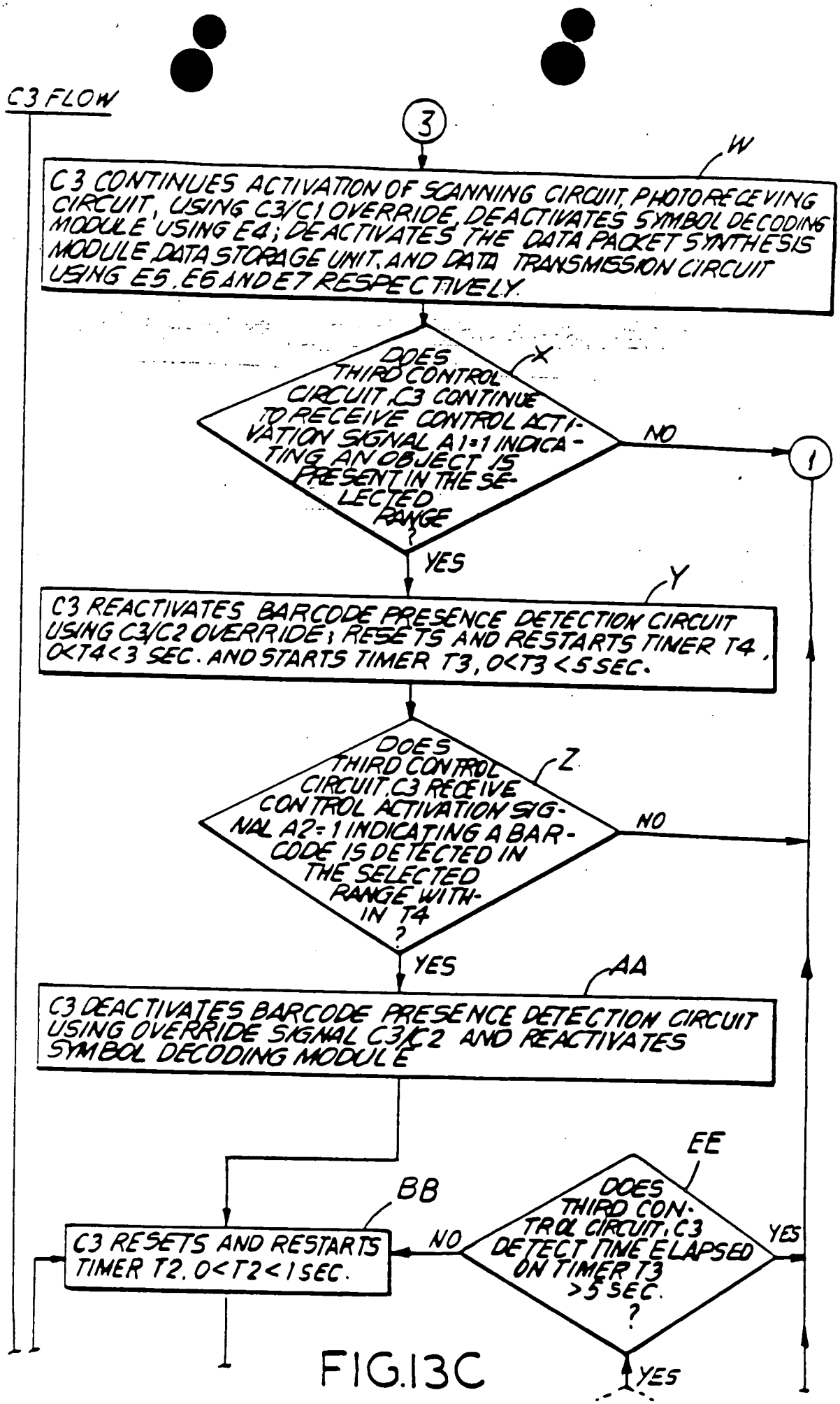

C3 FLOW
3
W
C3 CONTINUES ACTIVATION OF SCANNING CIRCUIT, PHOTORECEVING CIRCUIT, USING C3/C1 OVERRIDE, DEACTIVATES SYMBOL DECODING MODULE USING E4; DEACTIVATES THE DATA PACKET SYNTHESIS MODULE DATA STORAGE UNIT, AND DATA TRANSMISSION CIRCUIT USING E5, E6 AND E7 RESPECTIVELY.
X
DOES THIRD CONTROL CIRCUIT C3 CONTINUE TO RECEIVE CONTROL ACTIVATION SIGNAL A1=1 INDICATING AN OBJECT IS PRESENT IN THE SELECTED RANGE ?
NO
1
YES
Y
C3 REACTIVATES BARCODE PRESENCE DETECTION CIRCUIT USING C3/C2 OVERRIDE; RESETS AND RESTARTS TIMER T4, 0<T4<3 SEC. AND STARTS TIMER T3, 0<T3<5 SEC.
Z
DOES THIRD CONTROL CIRCUIT C3 RECEIVE CONTROL ACTIVATION SIGNAL A2=1 INDICATING A BARCODE IS DETECTED IN THE SELECTED RANGE WITHIN T4 ?
NO
YES
AA
C3 DEACTIVATES BARCODE PRESENCE DETECTION CIRCUIT USING OVERRIDE SIGNAL C3/C2 AND REACTIVATES SYMBOL DECODING MODULE
EE
BB
DOES THIRD CONTROL CIRCUIT, C3 DETECT TIME ELAPSED ON TIMER T3 >5 SEC. ?
NO
YES
C3 RESETS AND RESTARTS TIMER T2. 0<T2<1 SEC.
YES

FIG.13C

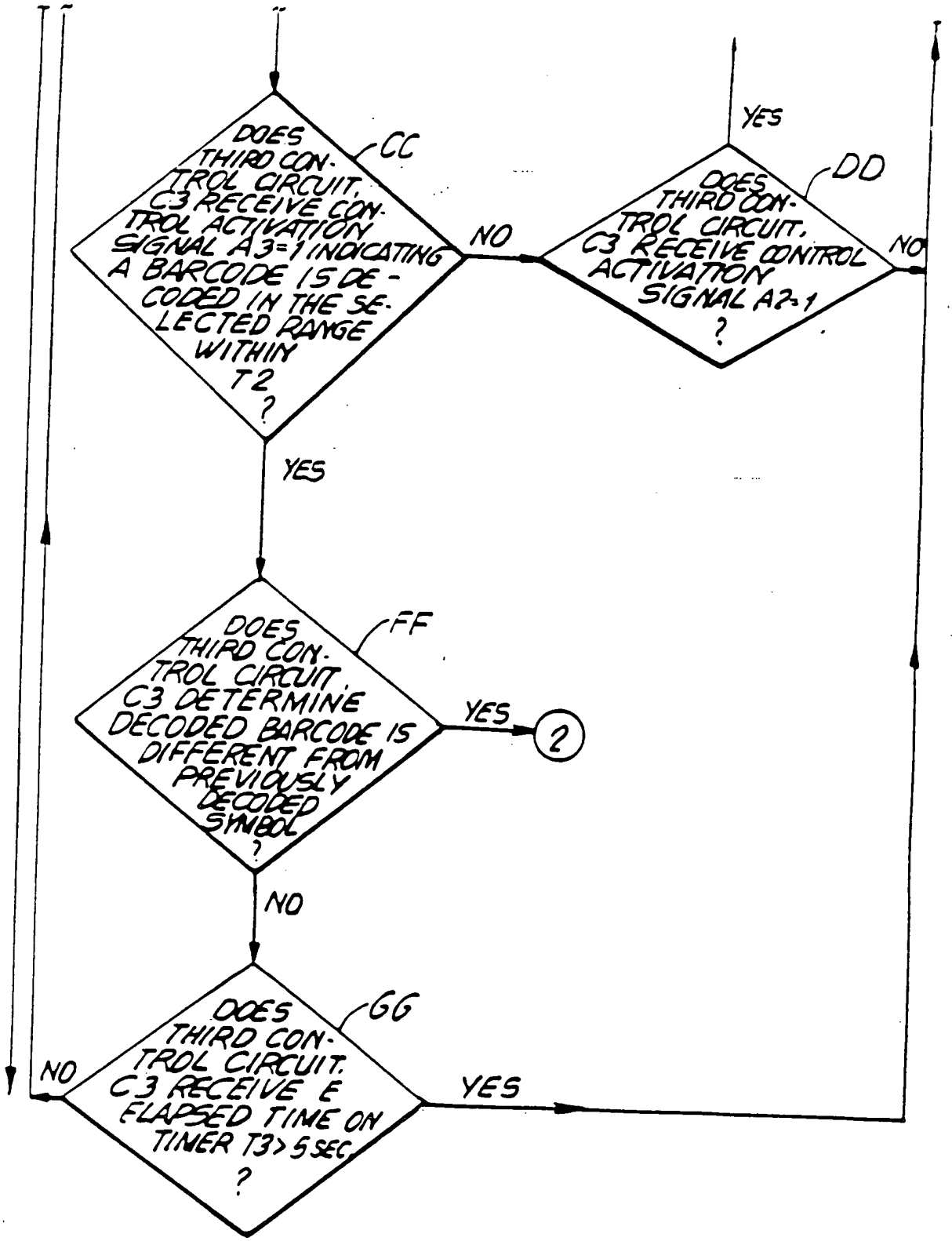

DOES THIRD CONTROL CIRCUIT C3 RECEIVE CONTROL ACTIVATION SIGNAL A3=1 INDICATING A BARCODE IS DECODED IN THE SELECTED RANGE WITHIN T2 ?
CC
NO
YES
DOES THIRD CONTROL CIRCUIT C3 RECEIVE CONTROL ACTIVATION SIGNAL A2=1 ?
DD
YES
NO
DOES THIRD CONTROL CIRCUIT C3 DETERMINE DECODED BARCODE IS DIFFERENT FROM PREVIOUSLY DECODED SYMBOL ?
FF
YES
2
NO
DOES THIRD CONTROL CIRCUIT C3 RECEIVE E ELAPSED TIME ON TIMER T3>5 SEC. ?
GG
NO
YES

FIG. 13CC

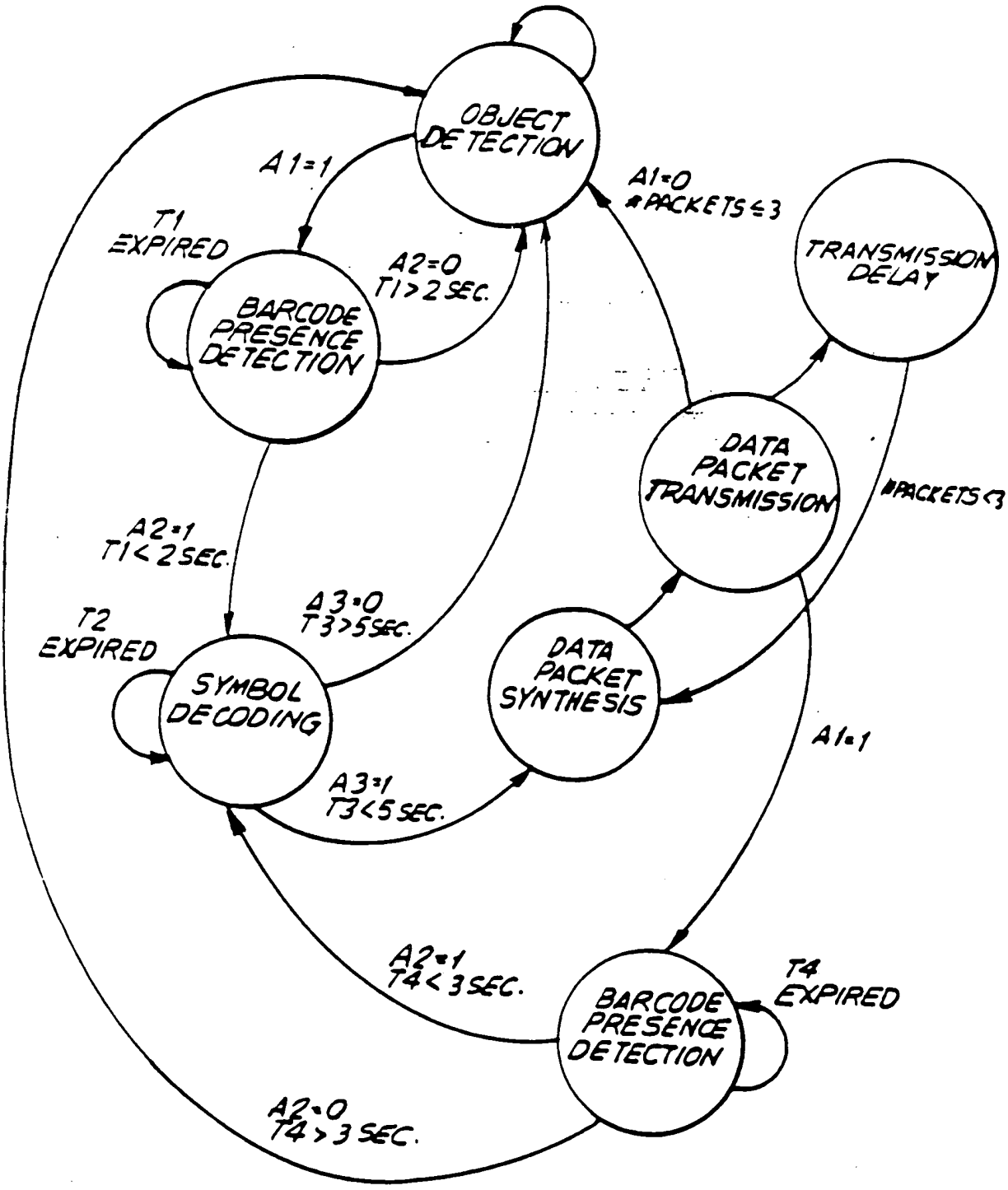

OBJECT DETECTION
A1=1
T1 EXPIRED
BARCODE PRESENCE DETECTION
A2=0 T1>2 SEC.
A1=0 #PACKETS≤3
TRANSMISSION DELAY
DATA PACKET TRANSMISSION
#PACKETS<3
A2=1 T1<2 SEC.
T2 EXPIRED
SYMBOL DECODING
A3=0 T3>5 SEC.
DATA PACKET SYNTHESIS
A1=1
A3=1 T3<5 SEC.
A2=1 T4<3 SEC.
T4 EXPIRED
BARCODE PRESENCE DETECTION
A2=0 T4>3 SEC.

FIG.14

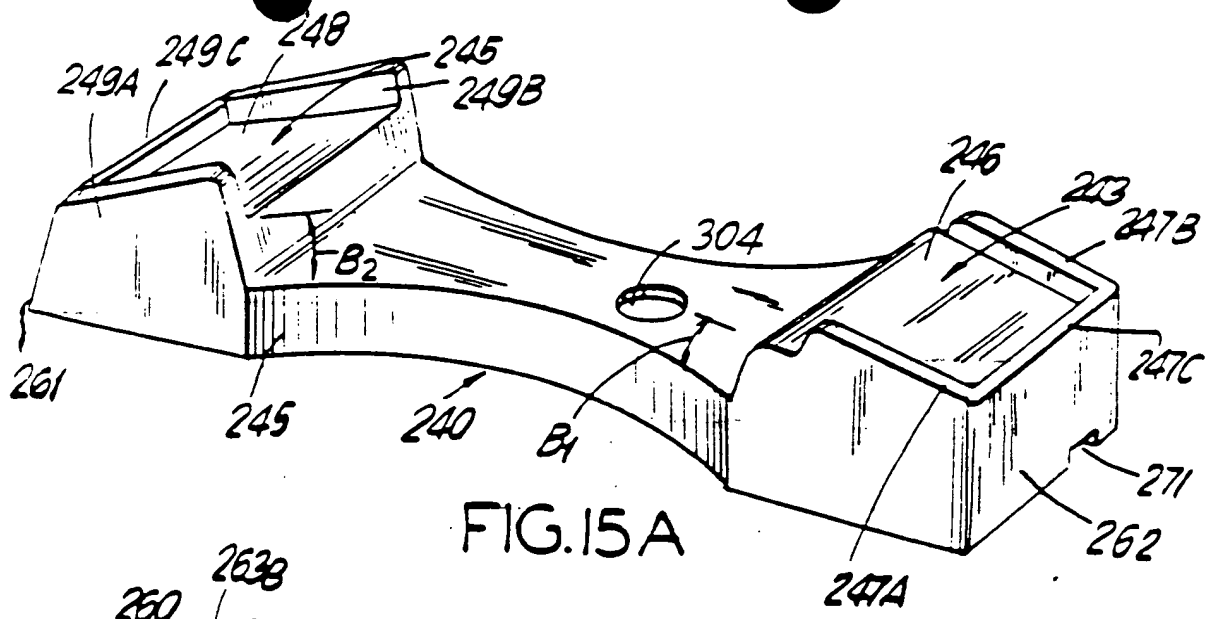


FIG.15A

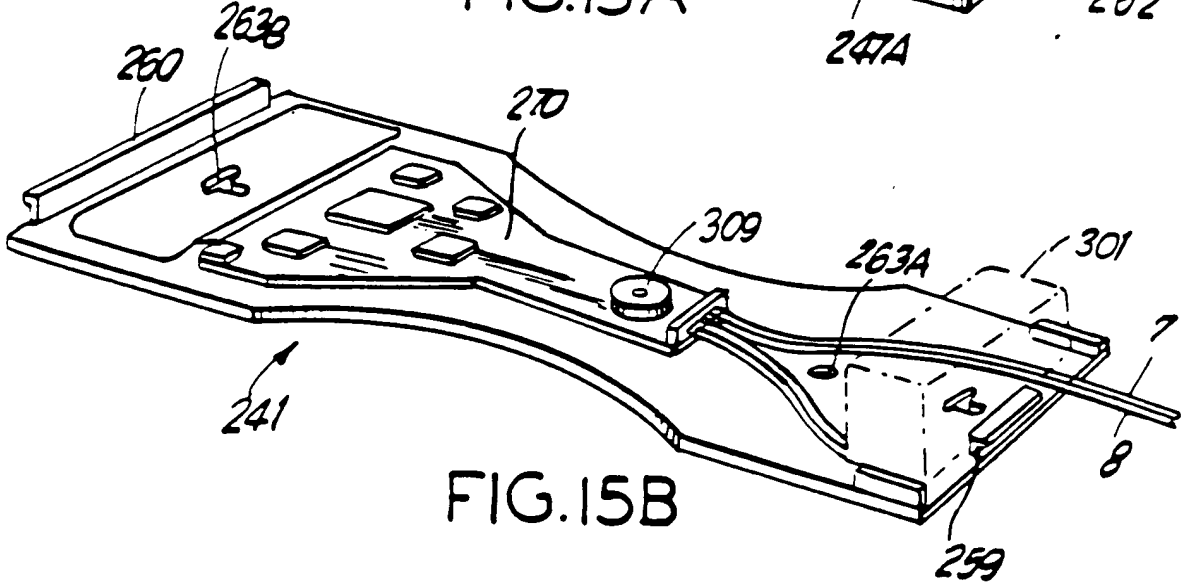


FIG.15B

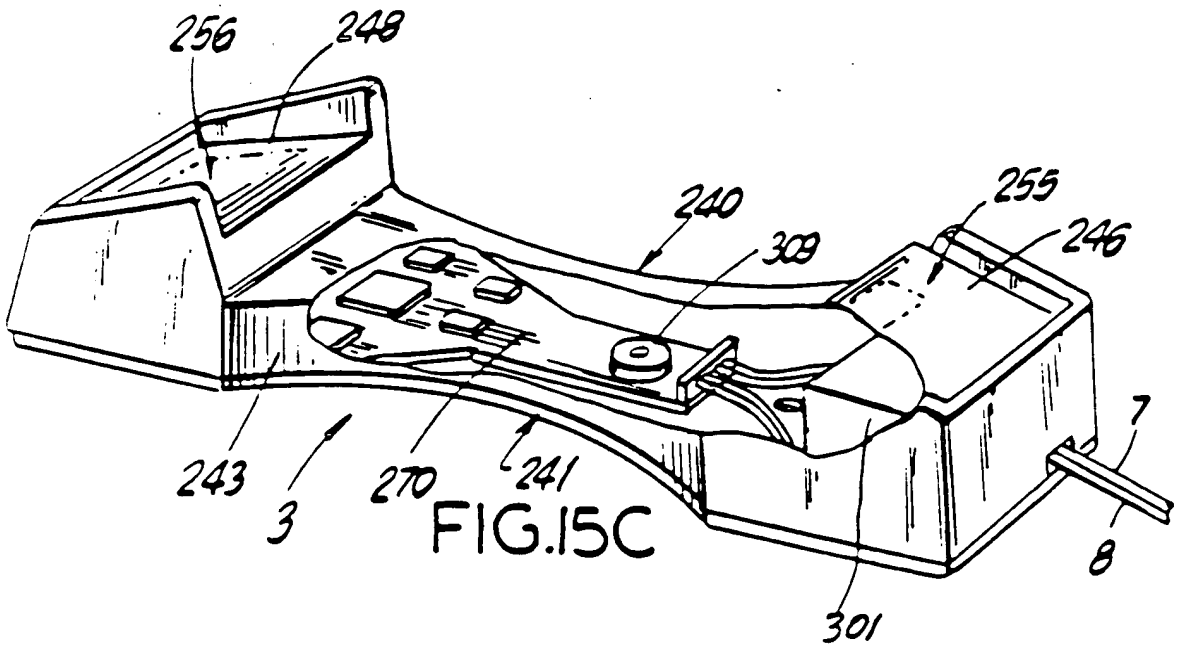


FIG.15C

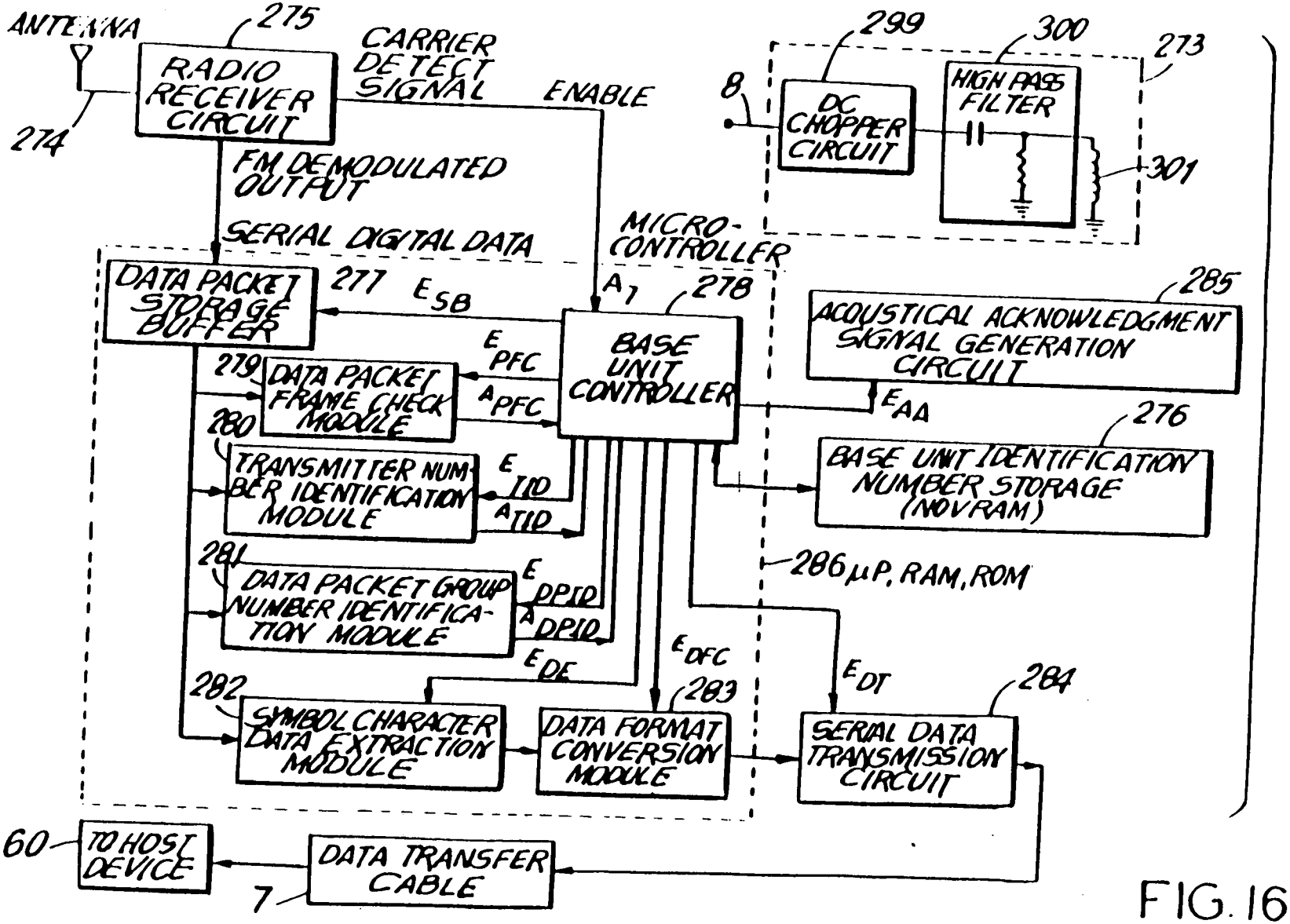

ANTENNA
274
275
RADIO RECEIVER CIRCUIT
CARRIER DETECT SIGNAL
ENABLE
FM DEMODULATED OUTPUT
SERIAL DIGITAL DATA
299
300
273
8
DC CHOPPER CIRCUIT
HIGH PASS FILTER
301
MICRO-CONTROLLER
DATA PACKET STORAGE BUFFER
277
E_{SB}
A_1
278
BASE UNIT CONTROLLER
285
ACOUSTICAL ACKNOWLEDGMENT SIGNAL GENERATION CIRCUIT
E_{PFC}
A_{PFC}
279
DATA PACKET FRAME CHECK MODULE
E_{AA}
276
280
TRANSMITTER NUMBER IDENTIFICATION MODULE
E_{TID}
A_{TID}
BASE UNIT IDENTIFICATION NUMBER STORAGE (NOVRAM)
281
DATA PACKET GROUP NUMBER IDENTIFICATION MODULE
E_{DPID}
A_{DPID}
286 μP, RAM, ROM
E_{DE}
E_{DFC}
E_{DT}
282
283
284
SYMBOL CHARACTER DATA EXTRACTION MODULE
DATA FORMAT CONVERSION MODULE
SERIAL DATA TRANSMISSION CIRCUIT
60
TO HOST DEVICE
DATA TRANSFER CABLE
7

FIG. 16

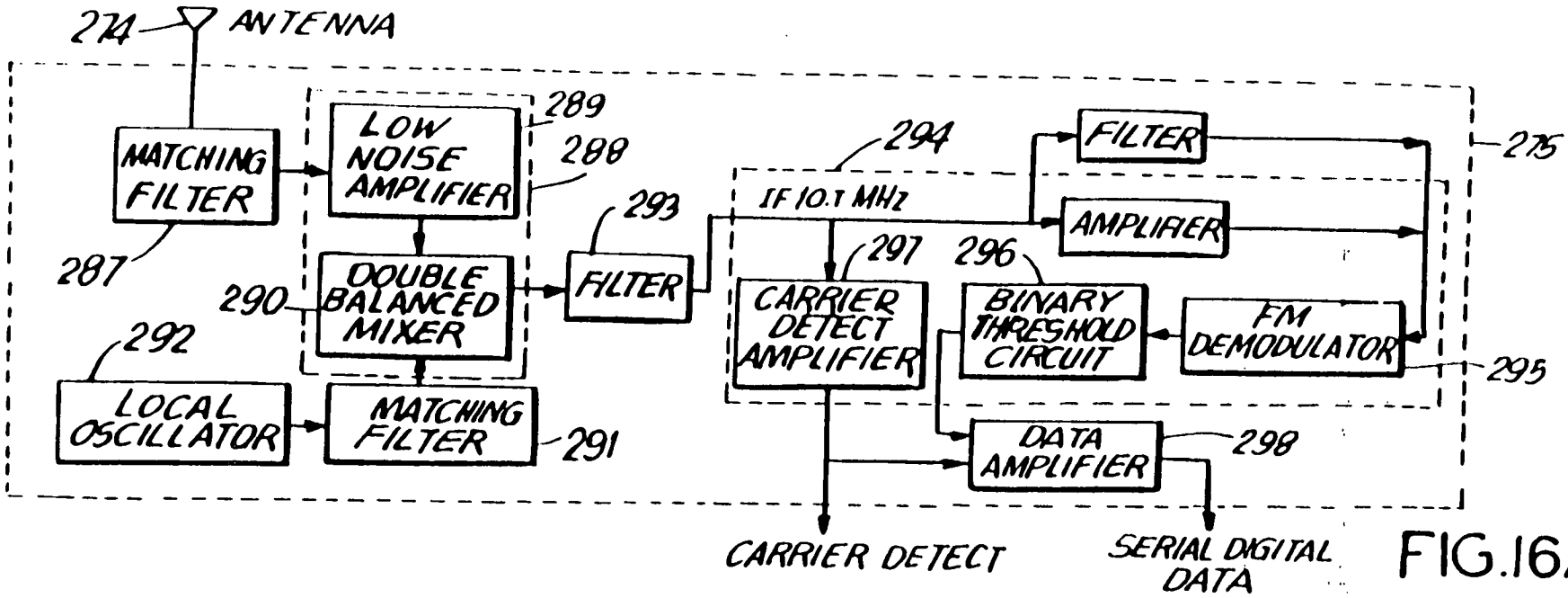


FIG.16A

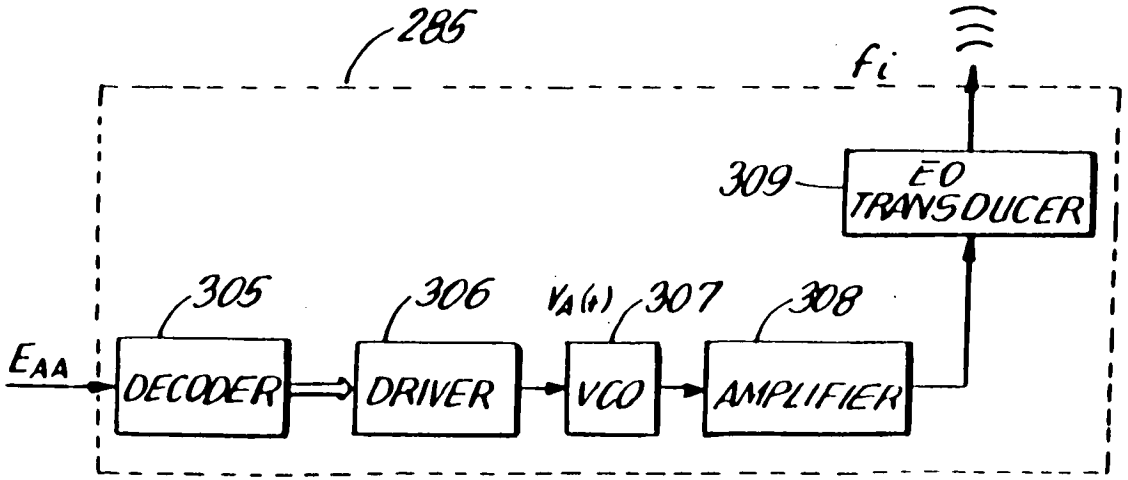


FIG.16B

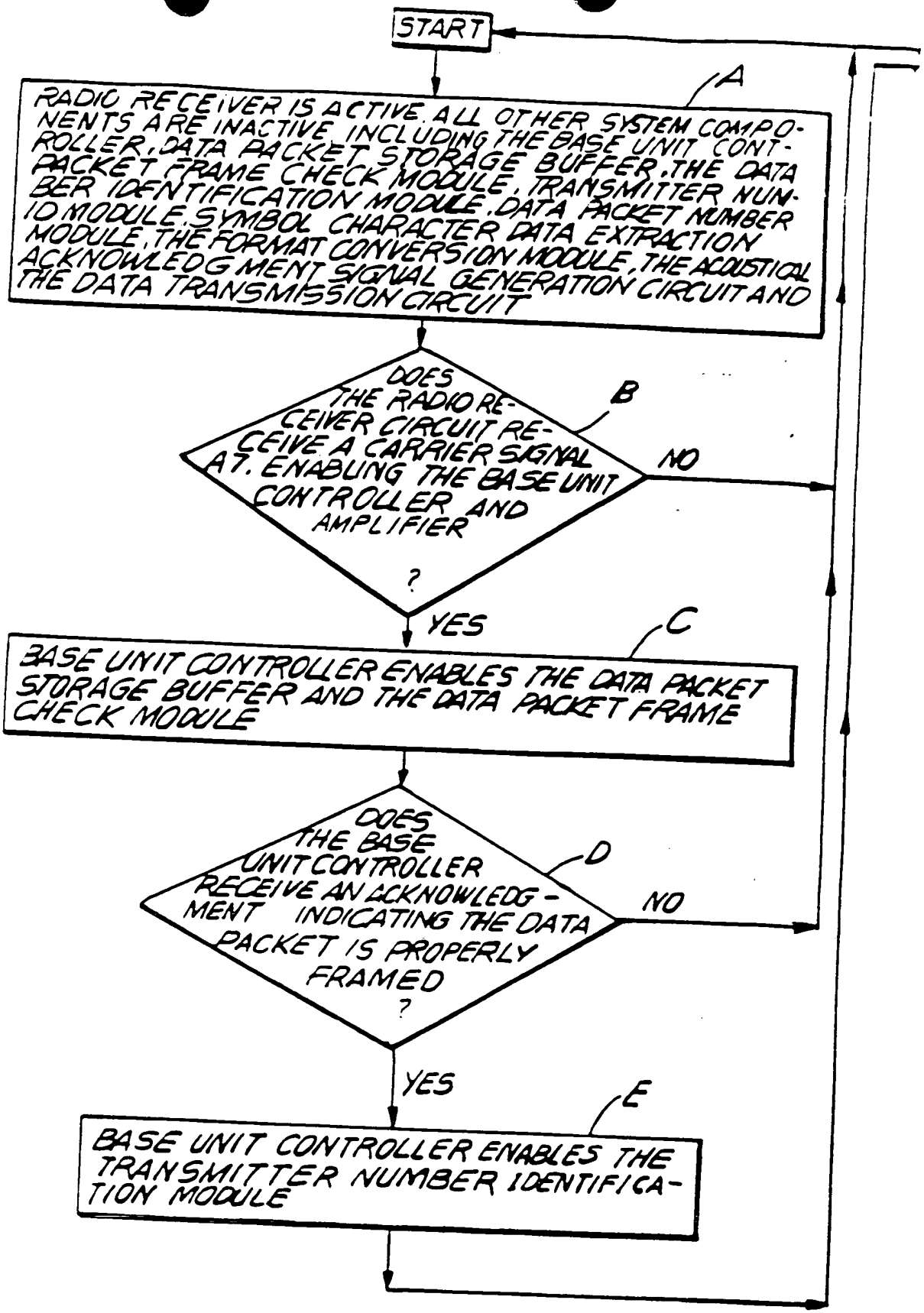

START
A
RADIO RECEIVER IS ACTIVE. ALL OTHER SYSTEM COMPONENTS ARE INACTIVE INCLUDING THE BASE UNIT CONTROLLER, DATA PACKET STORAGE BUFFER, THE DATA PACKET FRAME CHECK MODULE, TRANSMITTER NUMBER IDENTIFICATION MODULE, DATA PACKET NUMBER ID MODULE, SYMBOL CHARACTER DATA EXTRACTION MODULE, THE FORMAT CONVERSION MODULE, THE ACOUSTICAL ACKNOWLEDGMENT SIGNAL GENERATION CIRCUIT AND THE DATA TRANSMISSION CIRCUIT
B
DOES THE RADIO RECEIVER CIRCUIT RECEIVE A CARRIER SIGNAL AT. ENABLING THE BASE UNIT CONTROLLER AND AMPLIFIER ?
NO
YES
C
BASE UNIT CONTROLLER ENABLES THE DATA PACKET STORAGE BUFFER AND THE DATA PACKET FRAME CHECK MODULE
D
DOES THE BASE UNIT CONTROLLER RECEIVE AN ACKNOWLEDGMENT INDICATING THE DATA PACKET IS PROPERLY FRAMED ?
NO
YES
E
BASE UNIT CONTROLLER ENABLES THE TRANSMITTER NUMBER IDENTIFICATION MODULE

FIG. 17

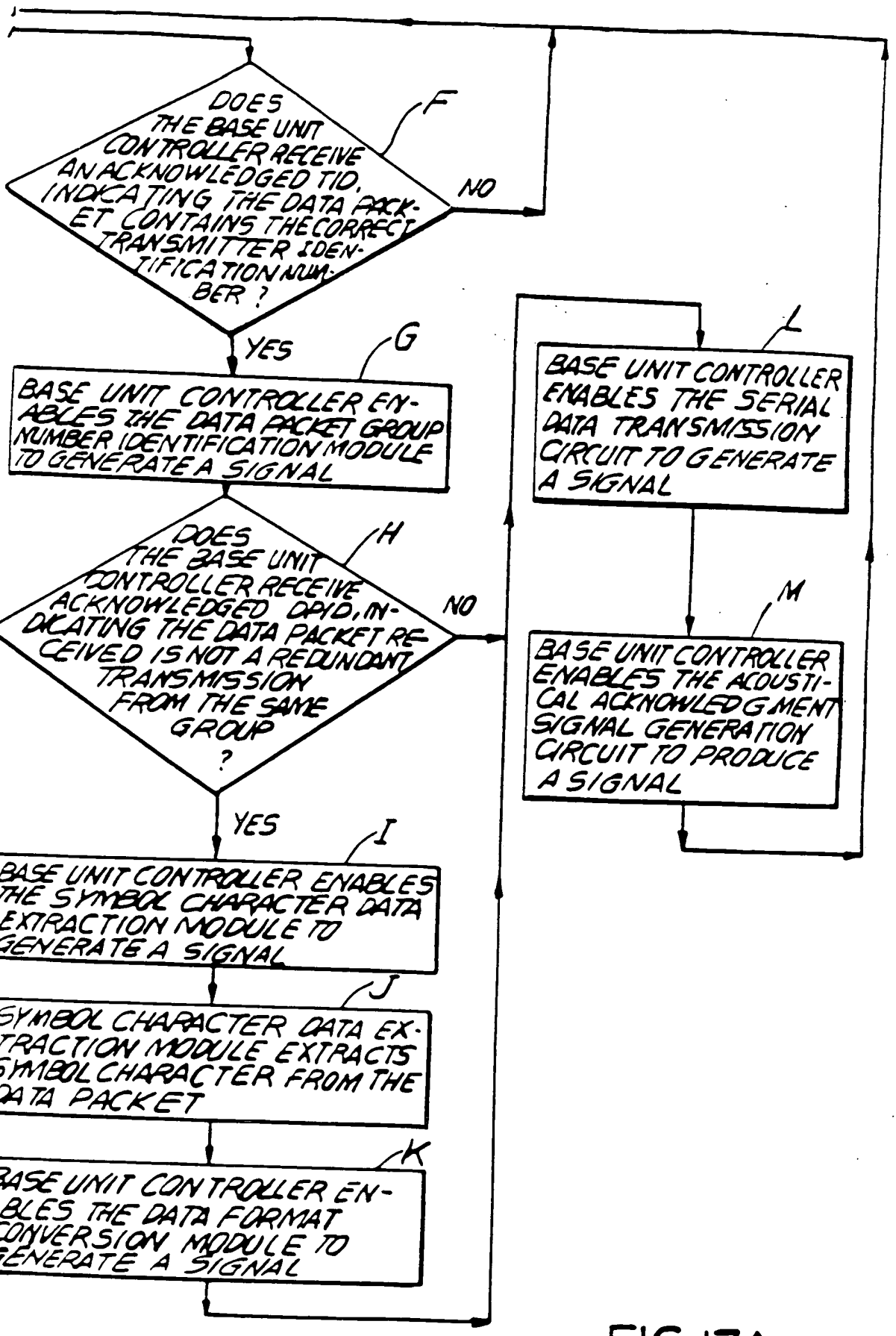

DOES THE BASE UNIT CONTROLLER RECEIVE AN ACKNOWLEDGED TID, INDICATING THE DATA PACKET CONTAINS THE CORRECT TRANSMITTER IDENTIFICATION NUMBER ?
F
NO
YES
BASE UNIT CONTROLLER ENABLES THE DATA PACKET GROUP NUMBER IDENTIFICATION MODULE TO GENERATE A SIGNAL
G
DOES THE BASE UNIT CONTROLLER RECEIVE ACKNOWLEDGED DPID, INDICATING THE DATA PACKET RECEIVED IS NOT A REDUNDANT TRANSMISSION FROM THE SAME GROUP ?
H
NO
YES
BASE UNIT CONTROLLER ENABLES THE SYMBOL CHARACTER DATA EXTRACTION MODULE TO GENERATE A SIGNAL
I
SYMBOL CHARACTER DATA EXTRACTION MODULE EXTRACTS SYMBOL CHARACTER FROM THE DATA PACKET
J
BASE UNIT CONTROLLER ENABLES THE DATA FORMAT CONVERSION MODULE TO GENERATE A SIGNAL
K
BASE UNIT CONTROLLER ENABLES THE SERIAL DATA TRANSMISSION CIRCUIT TO GENERATE A SIGNAL
L
BASE UNIT CONTROLLER ENABLES THE ACOUSTICAL ACKNOWLEDGMENT SIGNAL GENERATION CIRCUIT TO PRODUCE A SIGNAL
M

FIG.17A

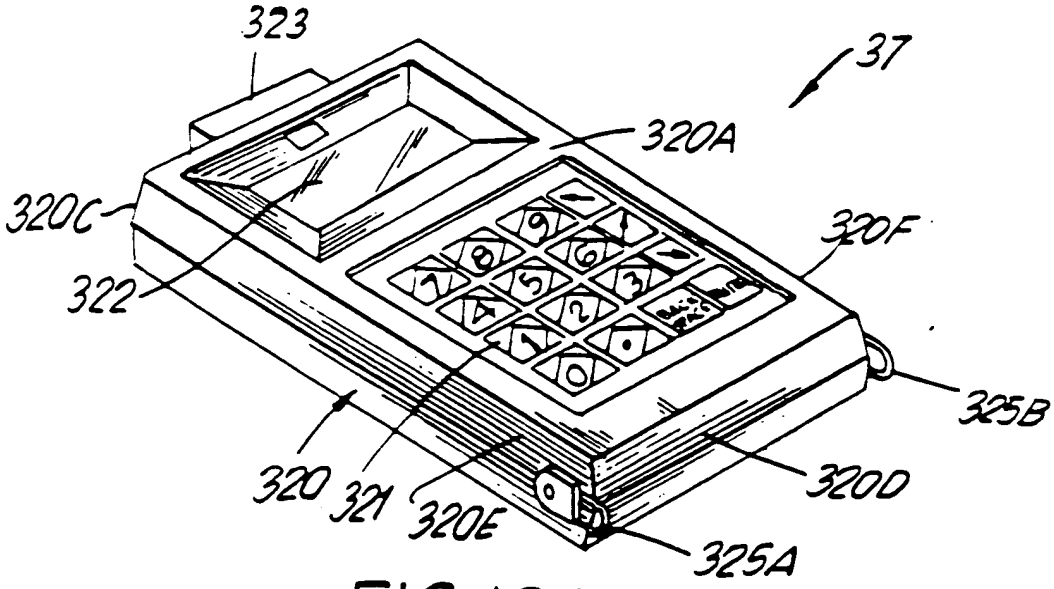


FIG.18A

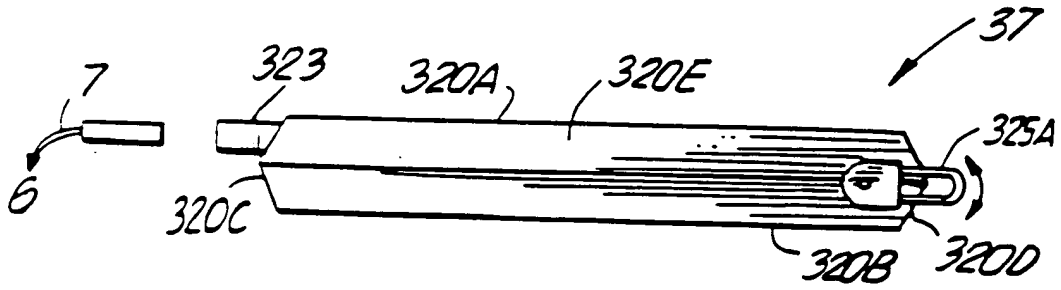


FIG.18B

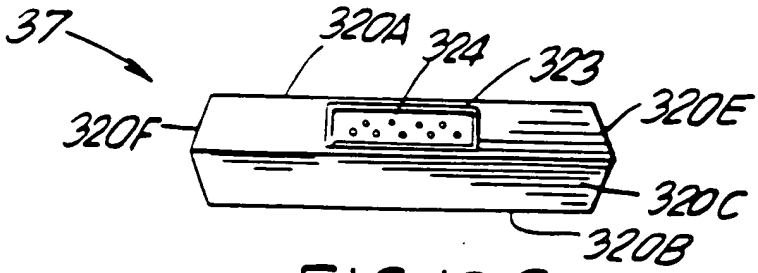


FIG.18C

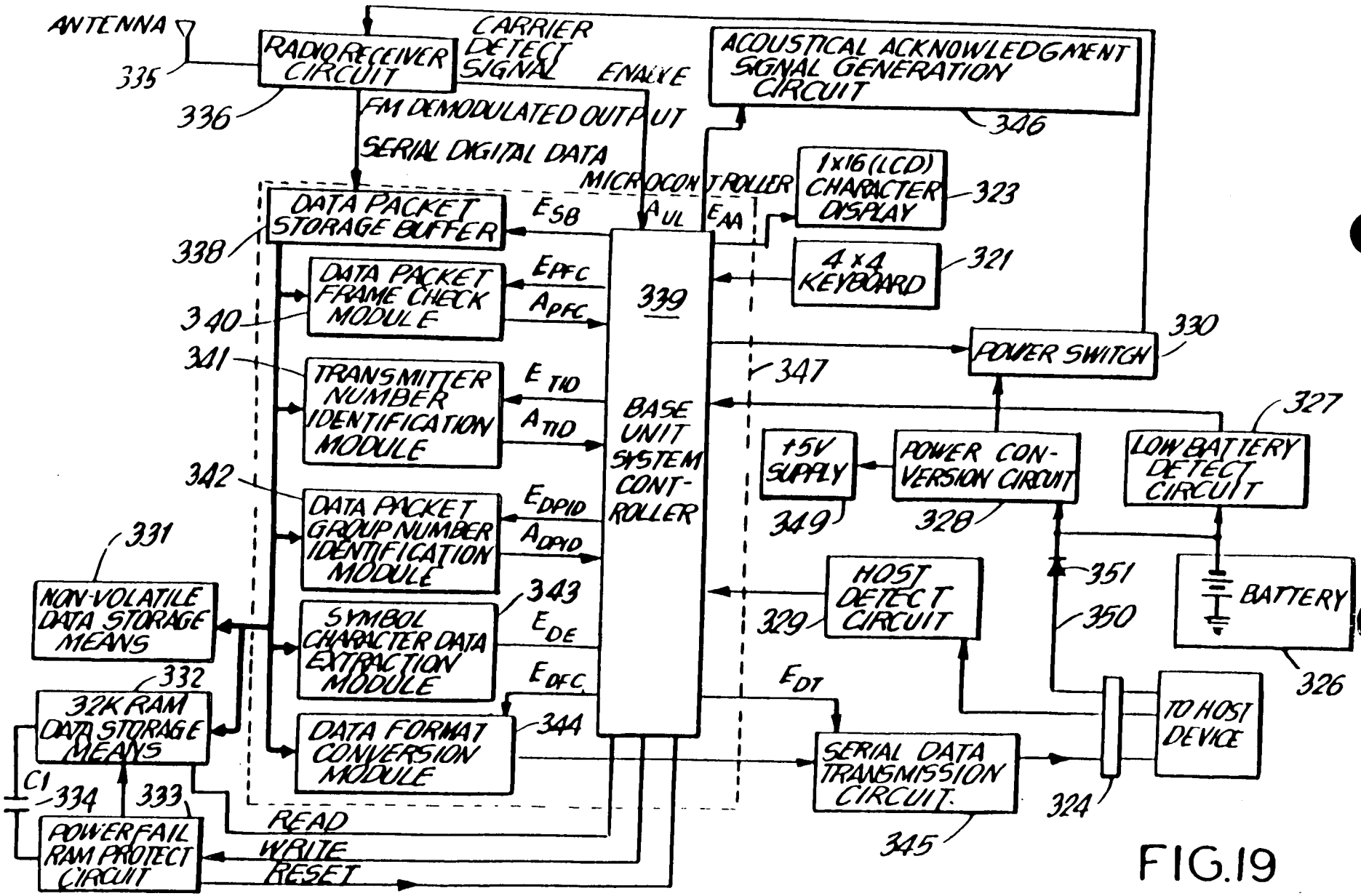


FIG.19

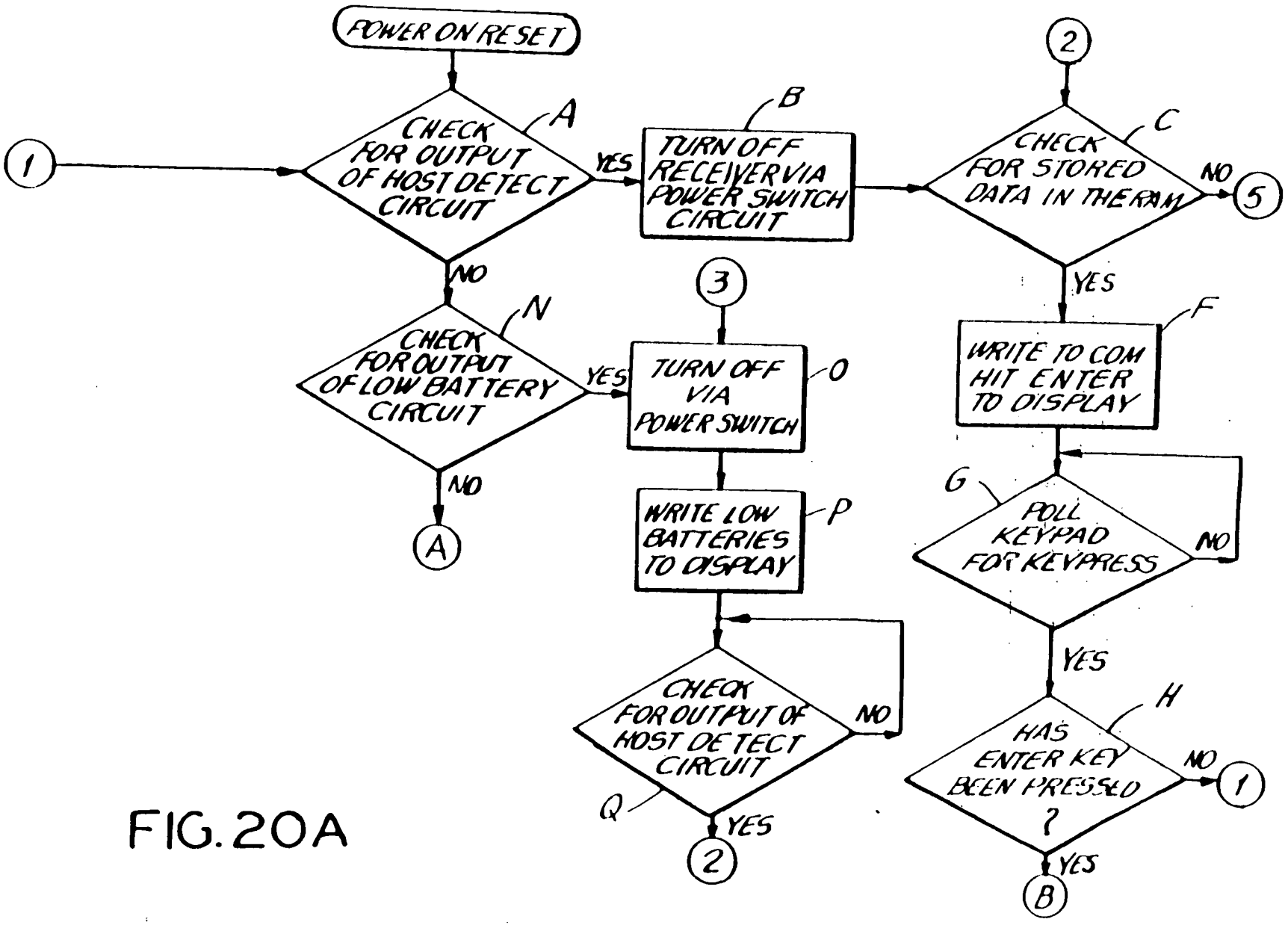


FIG. 20A

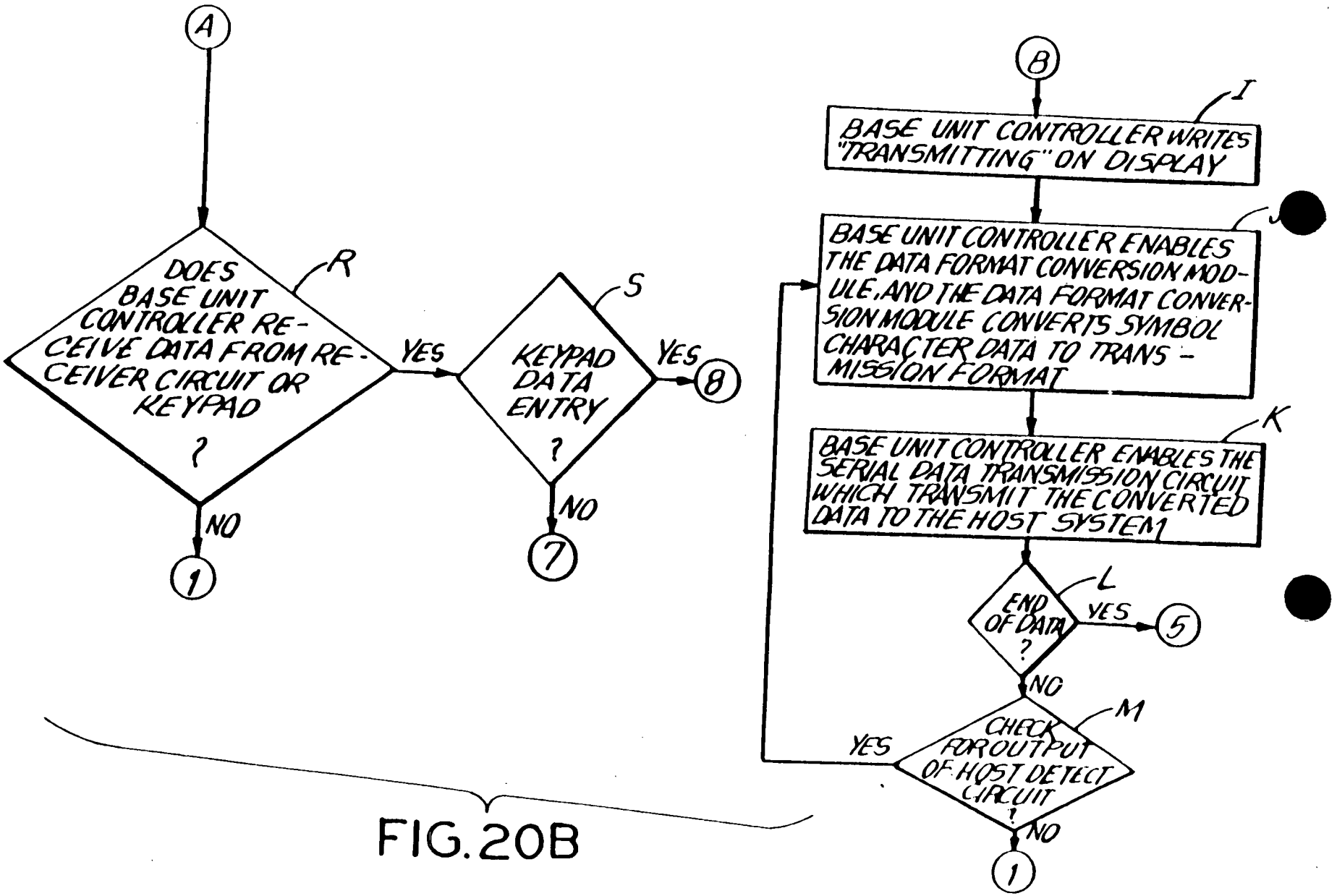

A
DOES BASE UNIT CONTROLLER RECEIVE DATA FROM RECEIVER CIRCUIT OR KEYPAD ?
R
YES
NO
1
KEYPAD DATA ENTRY ?
S
YES
8
NO
7
B
BASE UNIT CONTROLLER WRITES "TRANSMITTING" ON DISPLAY
I
BASE UNIT CONTROLLER ENABLES THE DATA FORMAT CONVERSION MODULE, AND THE DATA FORMAT CONVERSION MODULE CONVERTS SYMBOL CHARACTER DATA TO TRANSMISSION FORMAT
J
BASE UNIT CONTROLLER ENABLES THE SERIAL DATA TRANSMISSION CIRCUIT WHICH TRANSMIT THE CONVERTED DATA TO THE HOST SYSTEM
K
END OF DATA ?
L
YES
5
NO
CHECK FOR OUTPUT OF HOST DETECT CIRCUIT ?
M
YES
NO
1

FIG. 20B

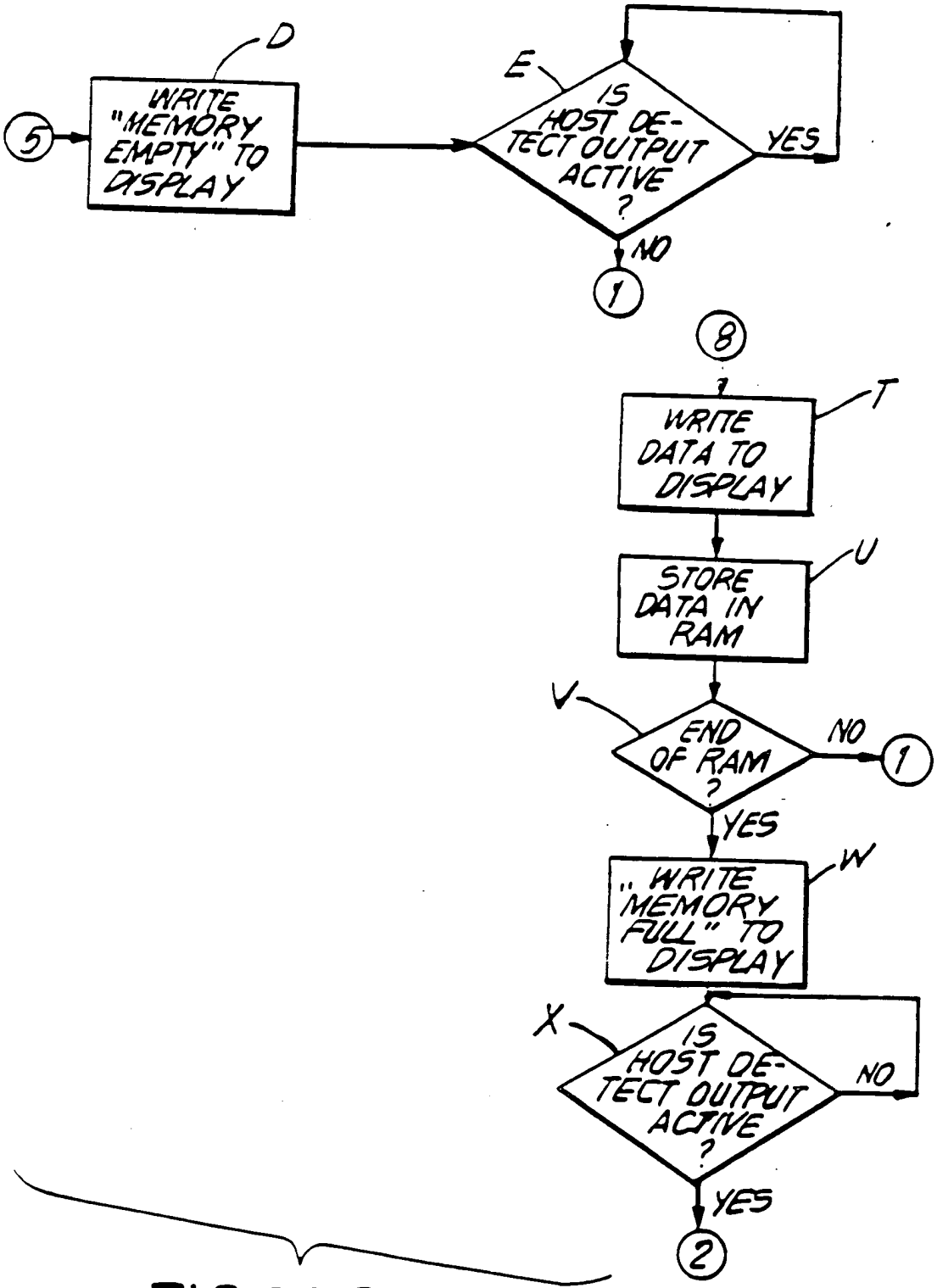
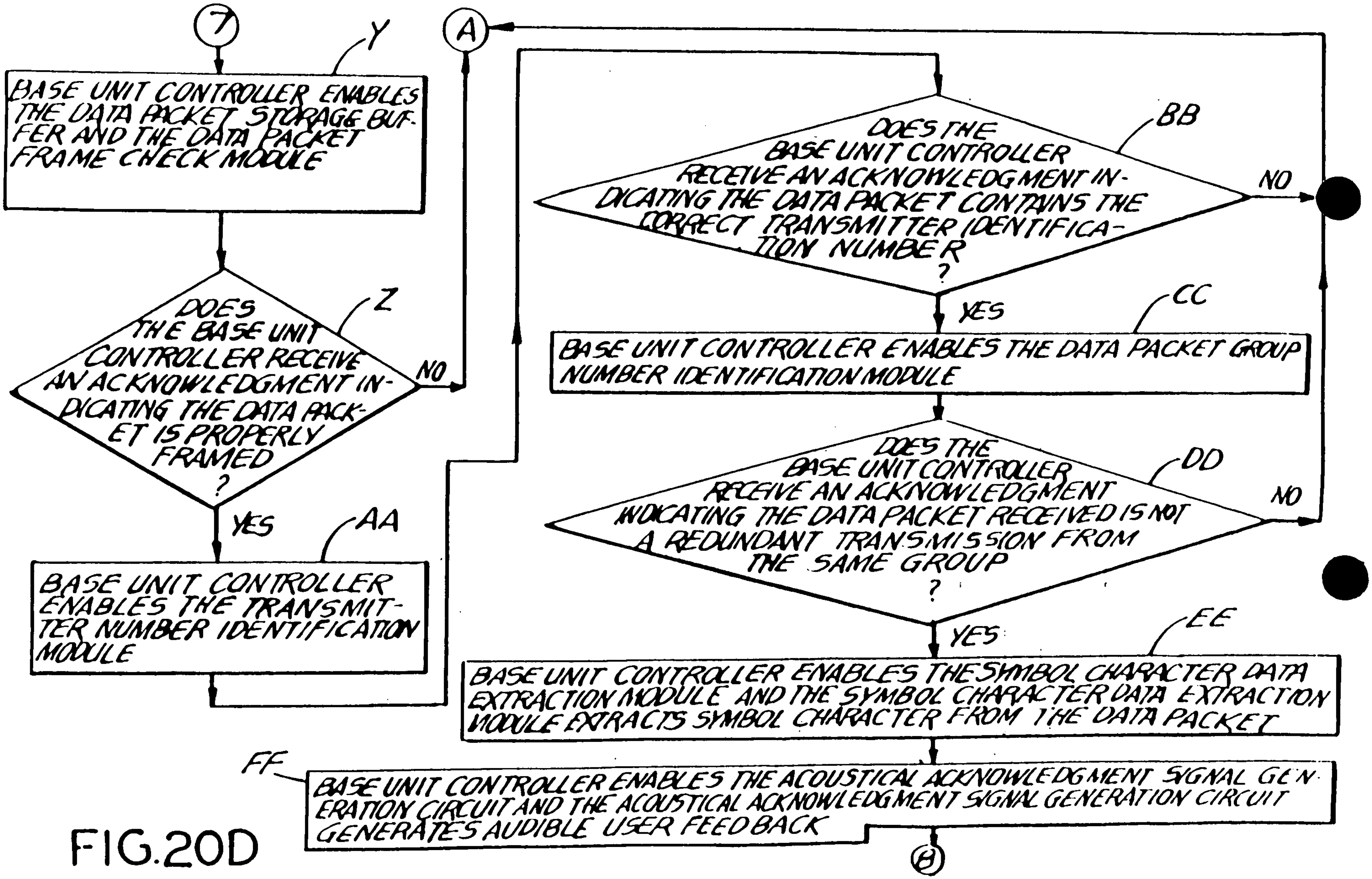

5
D
WRITE "MEMORY EMPTY" TO DISPLAY
E
IS HOST DE-TECT OUTPUT ACTIVE ?
YES
NO
1
8
T
WRITE DATA TO DISPLAY
U
STORE DATA IN RAM
V
END OF RAM ?
NO
1
YES
W
WRITE "MEMORY FULL" TO DISPLAY
X
IS HOST DE-TECT OUTPUT ACTIVE ?
NO
YES
2

FIG.20C



7
Y
BASE UNIT CONTROLLER ENABLES THE DATA PACKET STORAGE BUFFER AND THE DATA PACKET FRAME CHECK MODULE
Z
DOES THE BASE UNIT CONTROLLER RECEIVE AN ACKNOWLEDGMENT INDICATING THE DATA PACKET IS PROPERLY FRAMED ?
NO
A
YES
AA
BASE UNIT CONTROLLER ENABLES THE TRANSMITTER NUMBER IDENTIFICATION MODULE
BB
DOES THE BASE UNIT CONTROLLER RECEIVE AN ACKNOWLEDGMENT INDICATING THE DATA PACKET CONTAINS THE CORRECT TRANSMITTER IDENTIFICATION NUMBER ?
NO
YES
CC
BASE UNIT CONTROLLER ENABLES THE DATA PACKET GROUP NUMBER IDENTIFICATION MODULE
DD
DOES THE BASE UNIT CONTROLLER RECEIVE AN ACKNOWLEDGMENT INDICATING THE DATA PACKET RECEIVED IS NOT A REDUNDANT TRANSMISSION FROM THE SAME GROUP ?
NO
YES
EE
BASE UNIT CONTROLLER ENABLES THE SYMBOL CHARACTER DATA EXTRACTION MODULE AND THE SYMBOL CHARACTER DATA EXTRACTION MODULE EXTRACTS SYMBOL CHARACTER FROM THE DATA PACKET
FF
BASE UNIT CONTROLLER ENABLES THE ACOUSTICAL ACKNOWLEDGMENT SIGNAL GENERATION CIRCUIT AND THE ACOUSTICAL ACKNOWLEDGMENT SIGNAL GENERATION CIRCUIT GENERATES AUDIBLE USER FEED BACK
B

FIG.20D

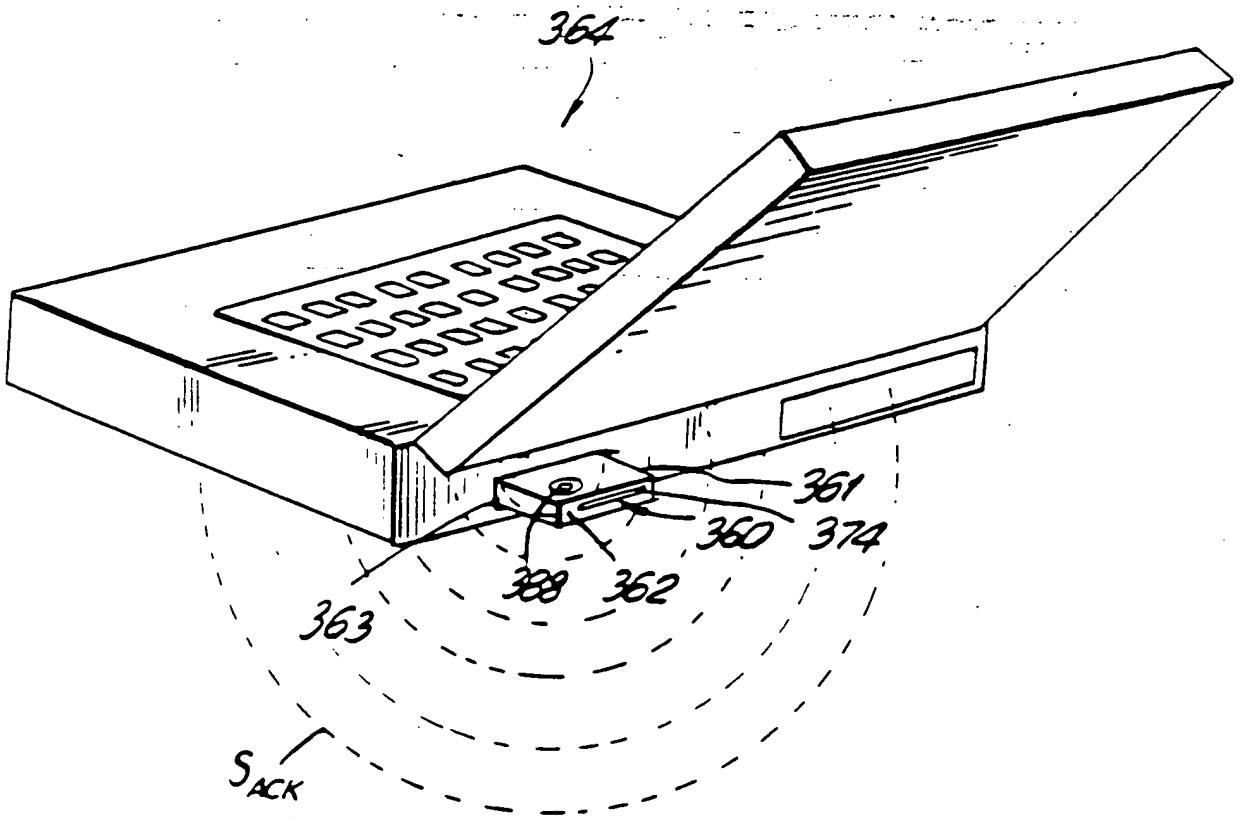
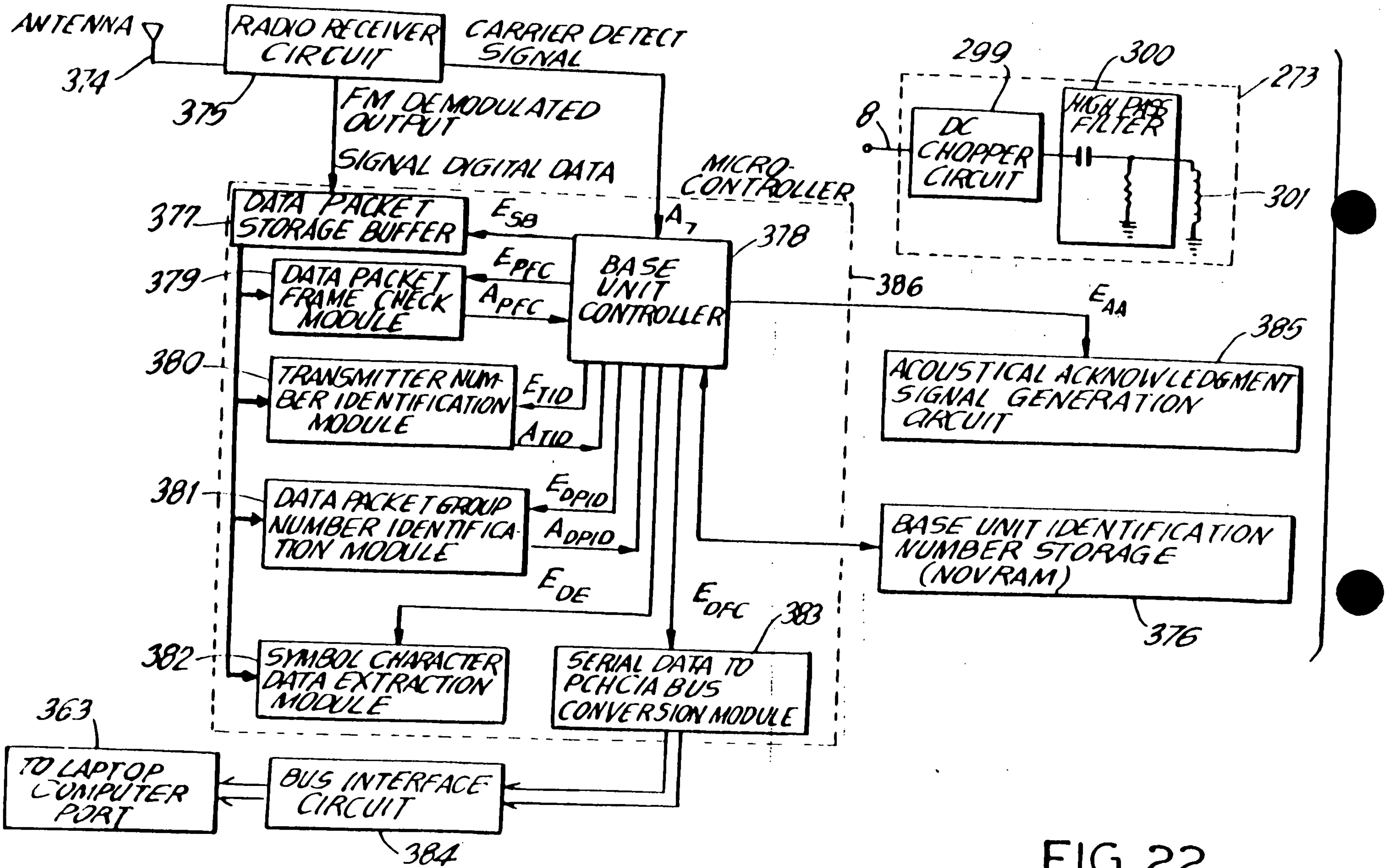


FIG. 21



ANTENNA
374
RADIO RECEIVER CIRCUIT
375
CARRIER DETECT SIGNAL
FM DEMODULATED OUTPUT
SIGNAL DIGITAL DATA
MICRO-CONTROLLER
377
DATA PACKET STORAGE BUFFER
E_{SB}
A_7
378
BASE UNIT CONTROLLER
379
DATA PACKET FRAME CHECK MODULE
E_{PFC}
A_{PFC}
380
TRANSMITTER NUMBER IDENTIFICATION MODULE
E_{TID}
A_{TID}
381
DATA PACKET GROUP NUMBER IDENTIFICATION MODULE
E_{DPID}
A_{DPID}
E_{DE}
E_{DFC}
382
SYMBOL CHARACTER DATA EXTRACTION MODULE
383
SERIAL DATA TO PCMCIA BUS CONVERSION MODULE
363
TO LAPTOP COMPUTER PORT
BUS INTERFACE CIRCUIT
384
299
300
273
8
DC CHOPPER CIRCUIT
HIGH PASS FILTER
301
386
E_{AA}
385
ACOUSTICAL ACKNOWLEDGEMENT SIGNAL GENERATION CIRCUIT
BASE UNIT IDENTIFICATION NUMBER STORAGE (NOVRAM)
376

FIG.22

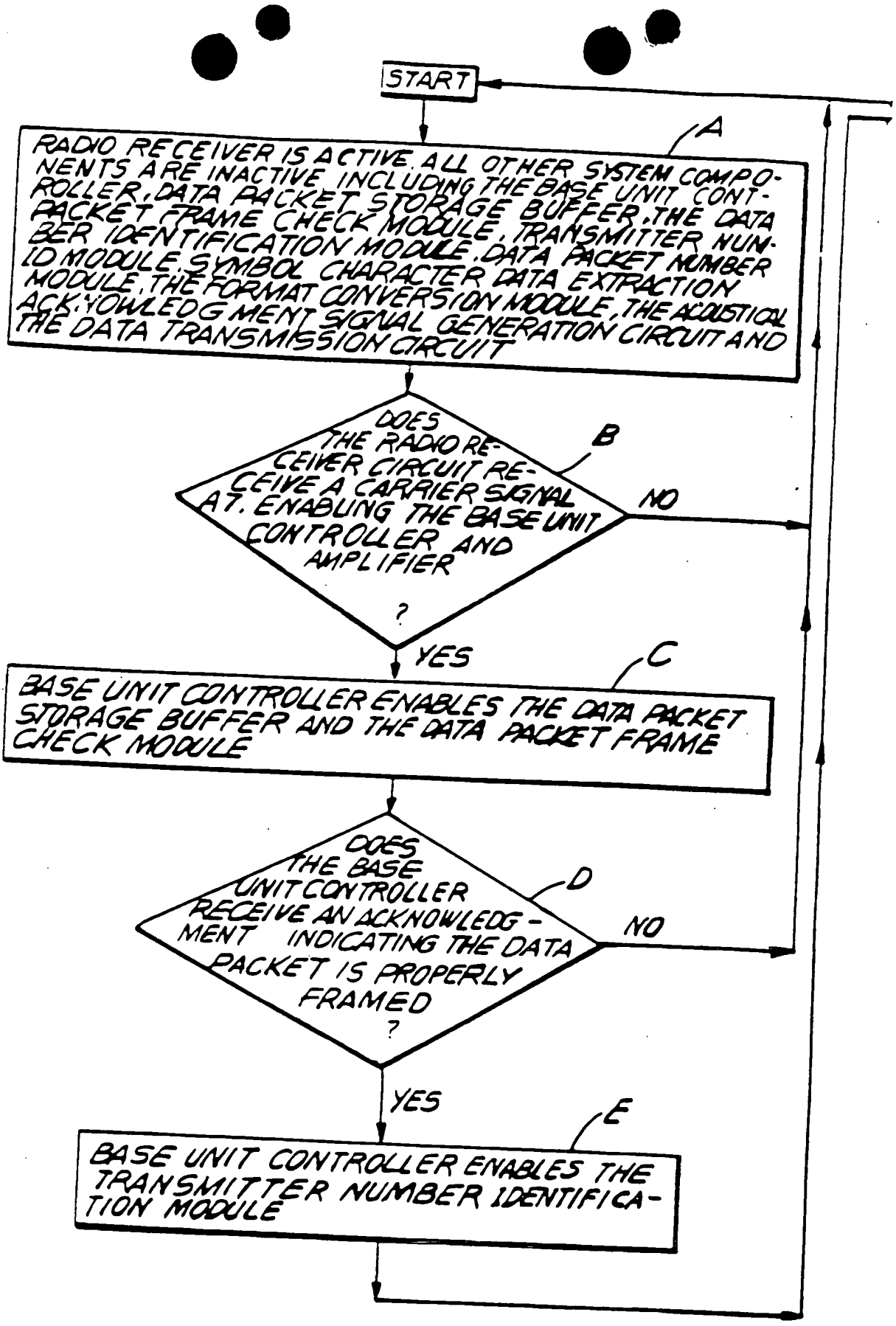

START
A
RADIO RECEIVER IS ACTIVE. ALL OTHER SYSTEM COMPONENTS ARE INACTIVE INCLUDING THE BASE UNIT CONTROLLER, DATA PACKET STORAGE BUFFER, THE DATA PACKET FRAME CHECK MODULE, TRANSMITTER NUMBER IDENTIFICATION MODULE, DATA PACKET NUMBER I.D MODULE, SYMBOL CHARACTER DATA EXTRACTION MODULE, THE FORMAT CONVERSION MODULE, THE ACOUSTICAL ACKNOWLEDGMENT SIGNAL GENERATION CIRCUIT AND THE DATA TRANSMISSION CIRCUIT
B
DOES THE RADIO RECEIVER CIRCUIT RECEIVE A CARRIER SIGNAL AT. ENABLING THE BASE UNIT CONTROLLER AND AMPLIFIER ?
NO
YES
C
BASE UNIT CONTROLLER ENABLES THE DATA PACKET STORAGE BUFFER AND THE DATA PACKET FRAME CHECK MODULE
D
DOES THE BASE UNIT CONTROLLER RECEIVE AN ACKNOWLEDGMENT INDICATING THE DATA PACKET IS PROPERLY FRAMED ?
NO
YES
E
BASE UNIT CONTROLLER ENABLES THE TRANSMITTER NUMBER IDENTIFICATION MODULE

FIG.23

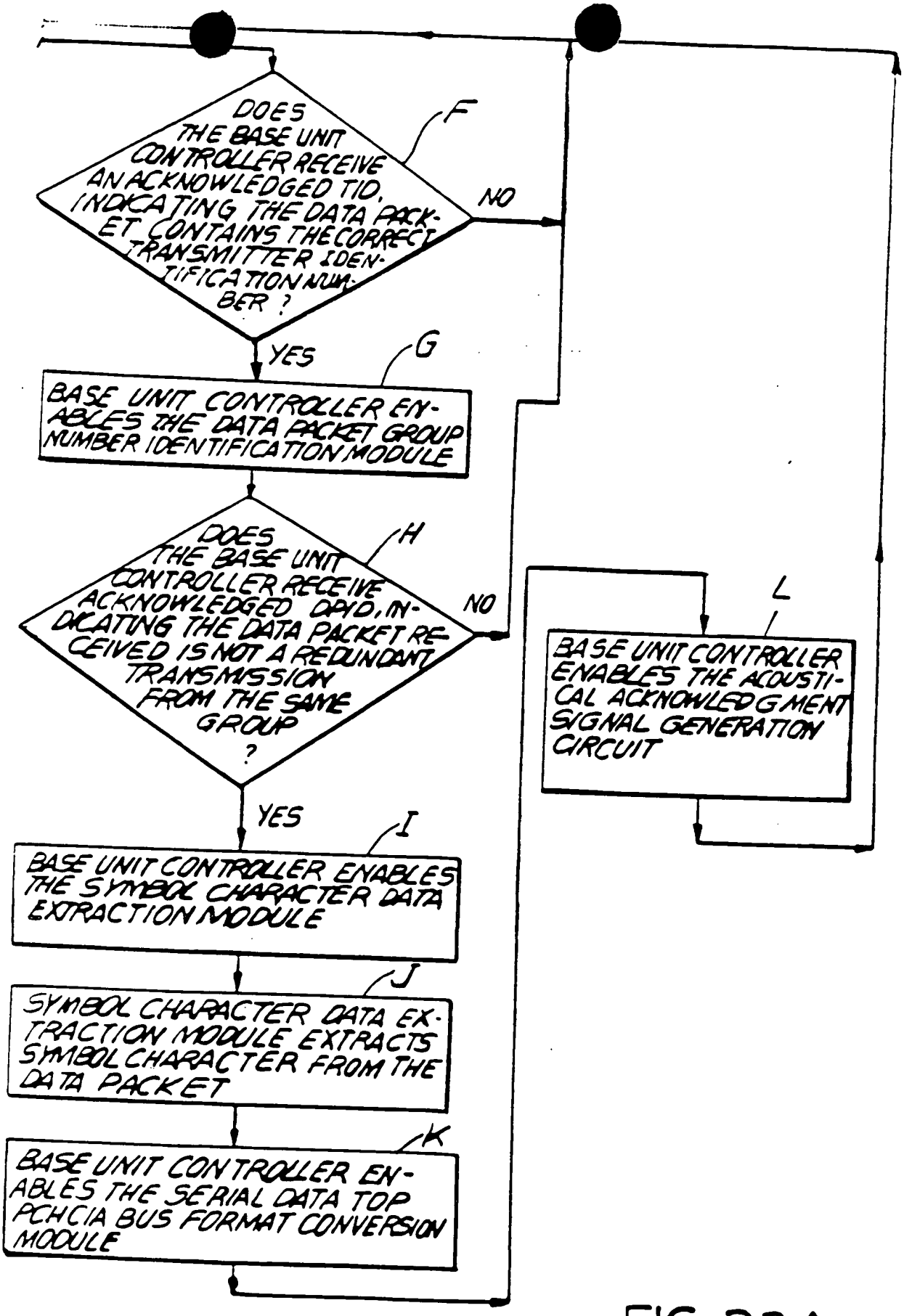

DOES THE BASE UNIT CONTROLLER RECEIVE AN ACKNOWLEDGED TID, INDICATING THE DATA PACKET CONTAINS THE CORRECT TRANSMITTER IDENTIFICATION NUMBER ?
F
NO
YES
G
BASE UNIT CONTROLLER ENABLES THE DATA PACKET GROUP NUMBER IDENTIFICATION MODULE
DOES THE BASE UNIT CONTROLLER RECEIVE ACKNOWLEDGED QAYD, INDICATING THE DATA PACKET RECEIVED IS NOT A REDUNDANT TRANSMISSION FROM THE SAME GROUP ?
H
NO
YES
L
BASE UNIT CONTROLLER ENABLES THE ACOUSTICAL ACKNOWLEDGMENT SIGNAL GENERATION CIRCUIT
I
BASE UNIT CONTROLLER ENABLES THE SYMBOL CHARACTER DATA EXTRACTION MODULE
J
SYMBOL CHARACTER DATA EXTRACTION MODULE EXTRACTS SYMBOL CHARACTER FROM THE DATA PACKET
K
BASE UNIT CONTROLLER ENABLES THE SERIAL DATA TOP PCHCIA BUS FORMAT CONVERSION MODULE

FIG. 23A

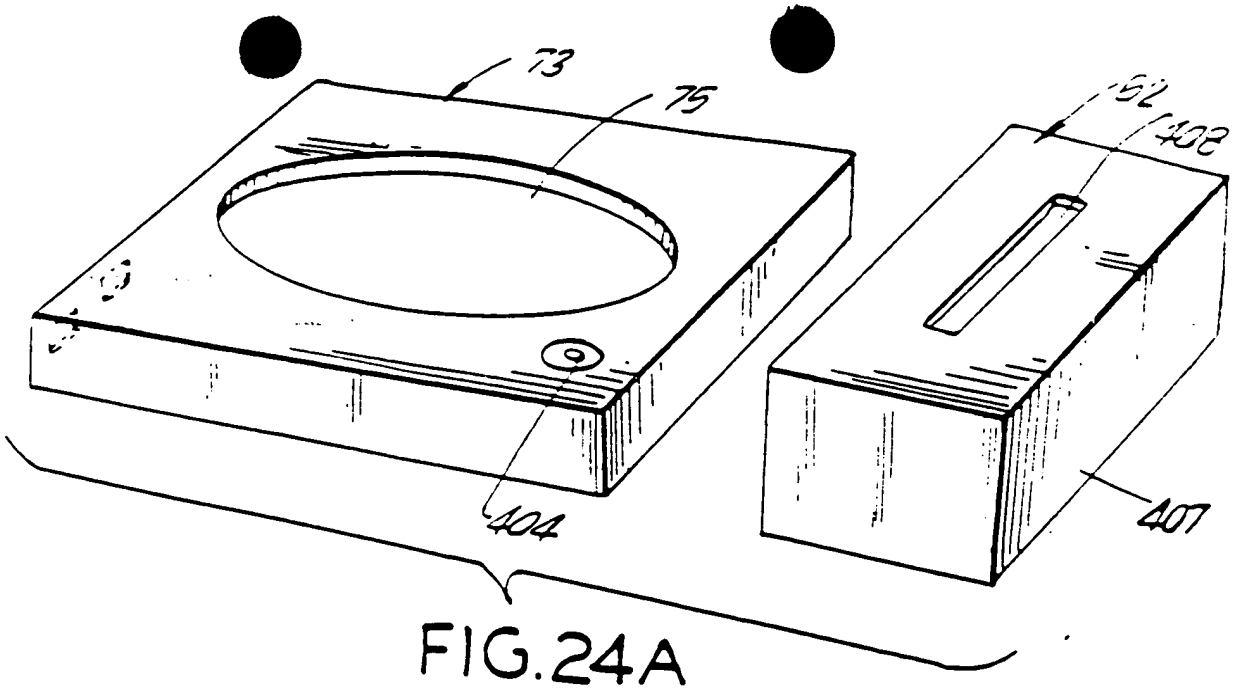


FIG. 24A

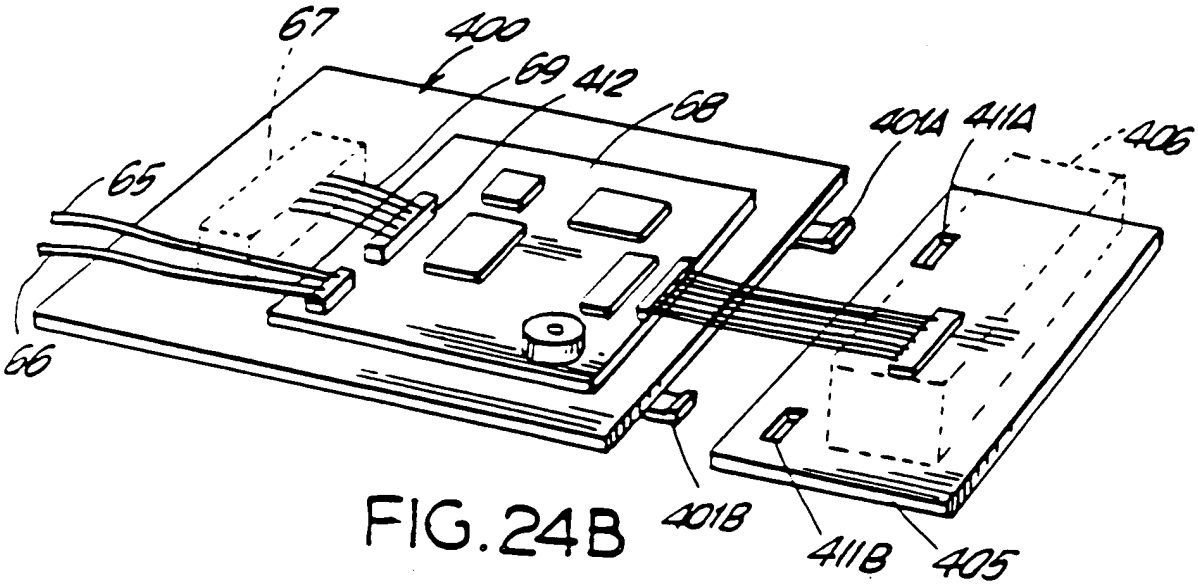


FIG. 24B

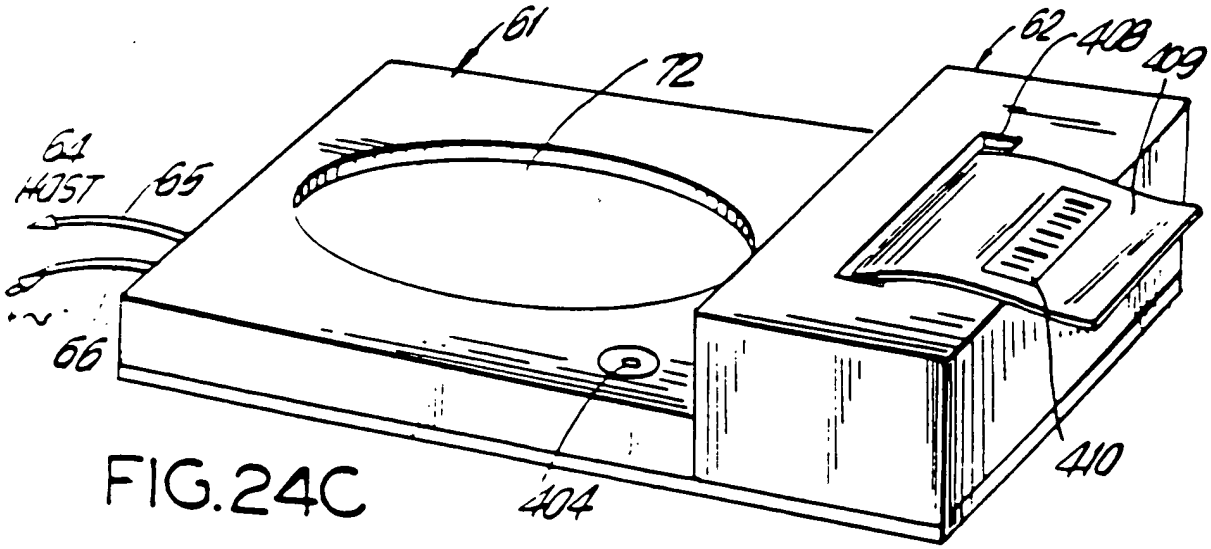


FIG. 24C

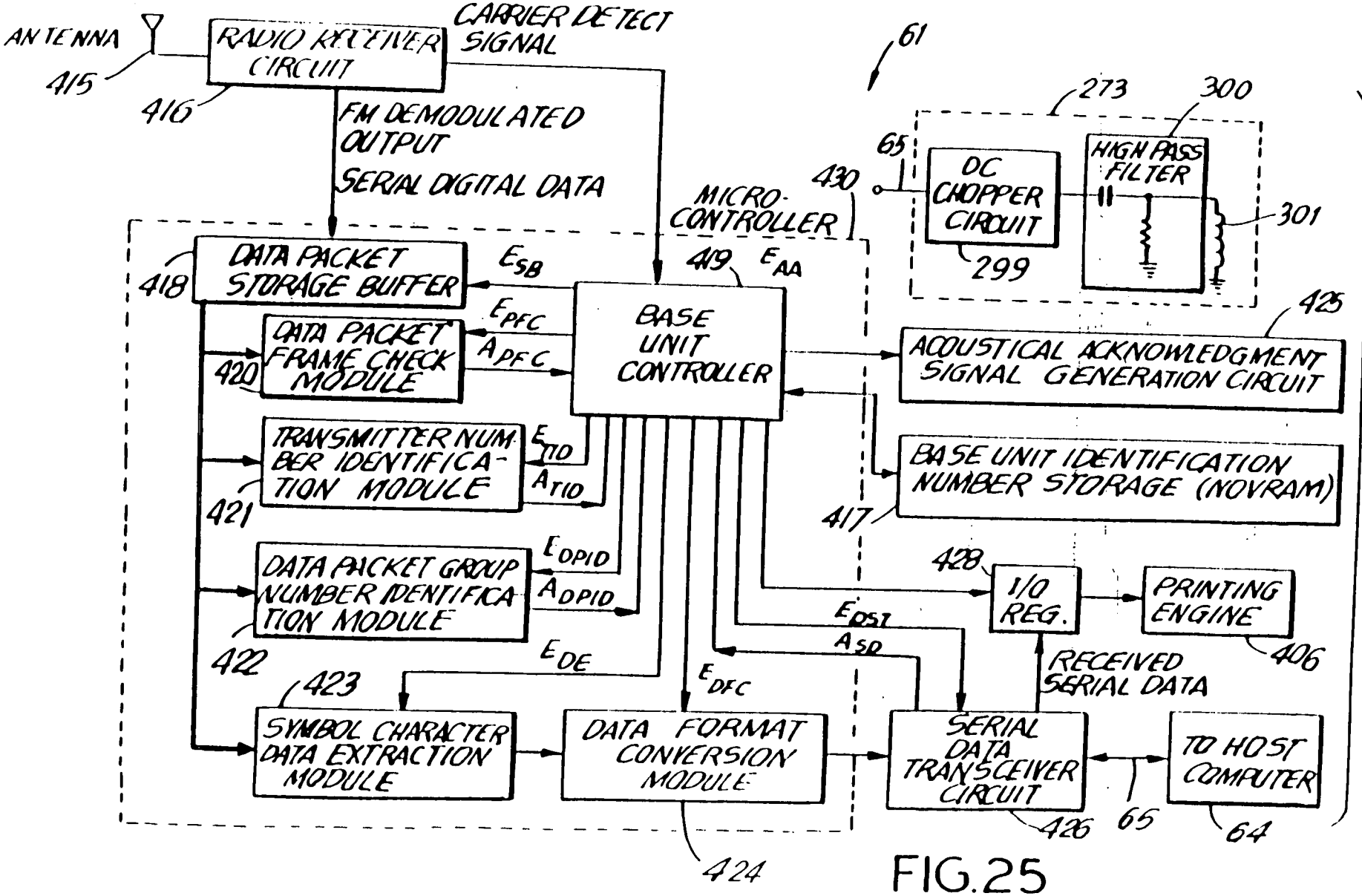

ANTENNA
415
RADIO RECEIVER CIRCUIT
416
CARRIER DETECT SIGNAL
FM DEMODULATED OUTPUT
SERIAL DIGITAL DATA
61
273
300
65
430
OC CHOPPER CIRCUIT
299
HIGH PASS FILTER
301
MICRO-CONTROLLER
DATA PACKET STORAGE BUFFER
418
E_{SB}
419
E_{AA}
E_{PFC}
A_{PFC}
DATA PACKET FRAME CHECK MODULE
420
BASE UNIT CONTROLLER
425
ACOUSTICAL ACKNOWLEDGMENT SIGNAL GENERATION CIRCUIT
E_{TIO}
A_{TIO}
TRANSMITTER NUMBER IDENTIFICATION MODULE
421
BASE UNIT IDENTIFICATION NUMBER STORAGE (NOVRAM)
417
E_{OPID}
A_{OPID}
DATA PACKET GROUP NUMBER IDENTIFICATION MODULE
422
428
I/O REG.
PRINTING ENGINE
406
E_{OSI}
A_{SD}
E_{DE}
E_{DFC}
RECEIVED SERIAL DATA
423
SYMBOL CHARACTER DATA EXTRACTION MODULE
DATA FORMAT CONVERSION MODULE
SERIAL DATA TRANSCEIVER CIRCUIT
426
65
TO HOST COMPUTER
64
424

FIG.25

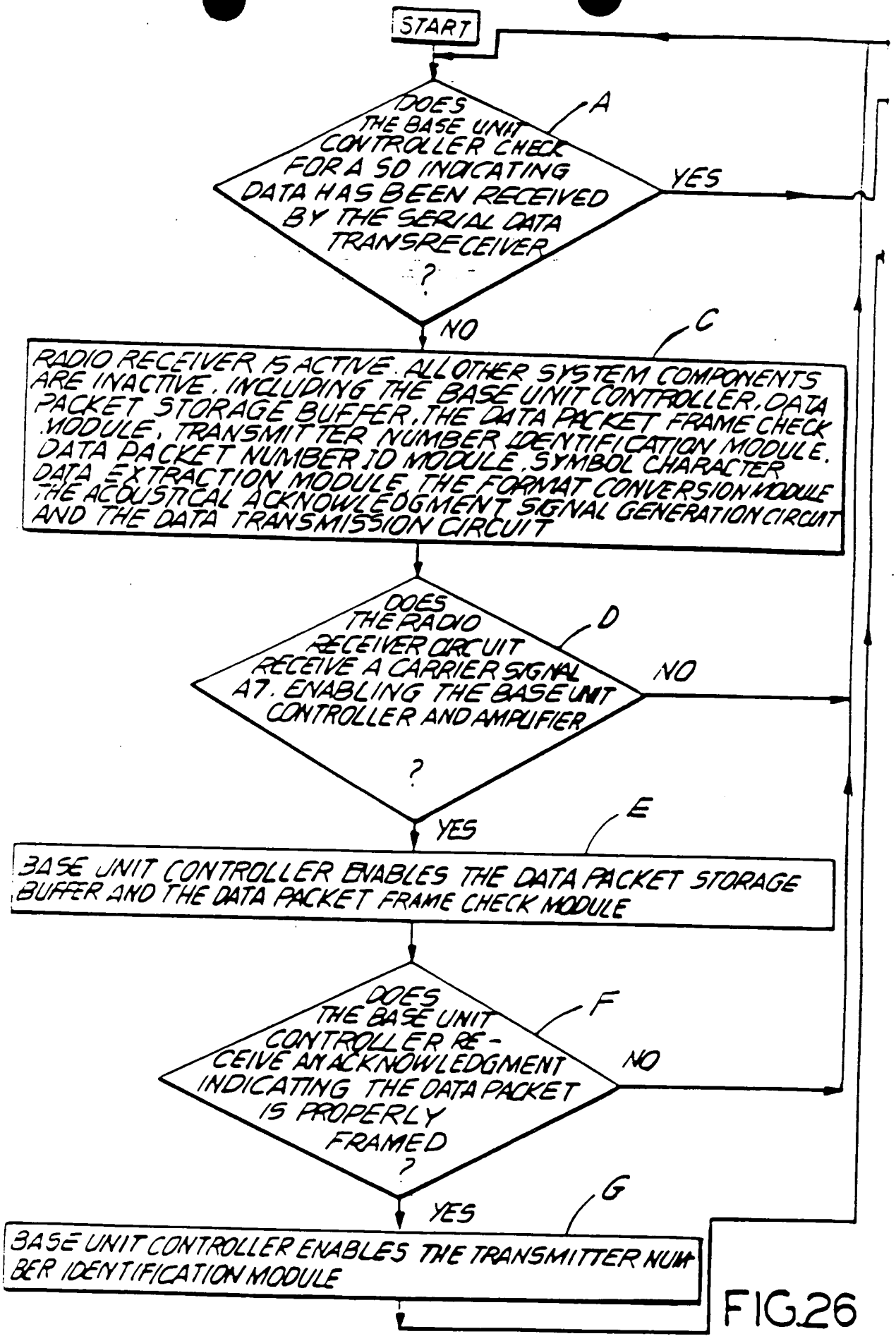

START
DOES THE BASE UNIT CONTROLLER CHECK FOR A SD INDICATING DATA HAS BEEN RECEIVED BY THE SERIAL DATA TRANSRECEIVER ?
A
YES
NO
C
RADIO RECEIVER IS ACTIVE. ALL OTHER SYSTEM COMPONENTS ARE INACTIVE, INCLUDING THE BASE UNIT CONTROLLER, DATA PACKET STORAGE BUFFER, THE DATA PACKET FRAME CHECK MODULE, TRANSMITTER NUMBER IDENTIFICATION MODULE, DATA PACKET NUMBER ID MODULE, SYMBOL CHARACTER DATA EXTRACTION MODULE, THE FORMAT CONVERSION MODULE, THE ACOUSTICAL ACKNOWLEDGMENT SIGNAL GENERATION CIRCUIT AND THE DATA TRANSMISSION CIRCUIT
DOES THE RADIO RECEIVER CIRCUIT RECEIVE A CARRIER SIGNAL AT ENABLING THE BASE UNIT CONTROLLER AND AMPLIFIER ?
D
NO
YES
E
BASE UNIT CONTROLLER ENABLES THE DATA PACKET STORAGE BUFFER AND THE DATA PACKET FRAME CHECK MODULE
DOES THE BASE UNIT CONTROLLER RECEIVE AN ACKNOWLEDGMENT INDICATING THE DATA PACKET IS PROPERLY FRAMED ?
F
NO
YES
G
BASE UNIT CONTROLLER ENABLES THE TRANSMITTER NUMBER IDENTIFICATION MODULE

FIG.26

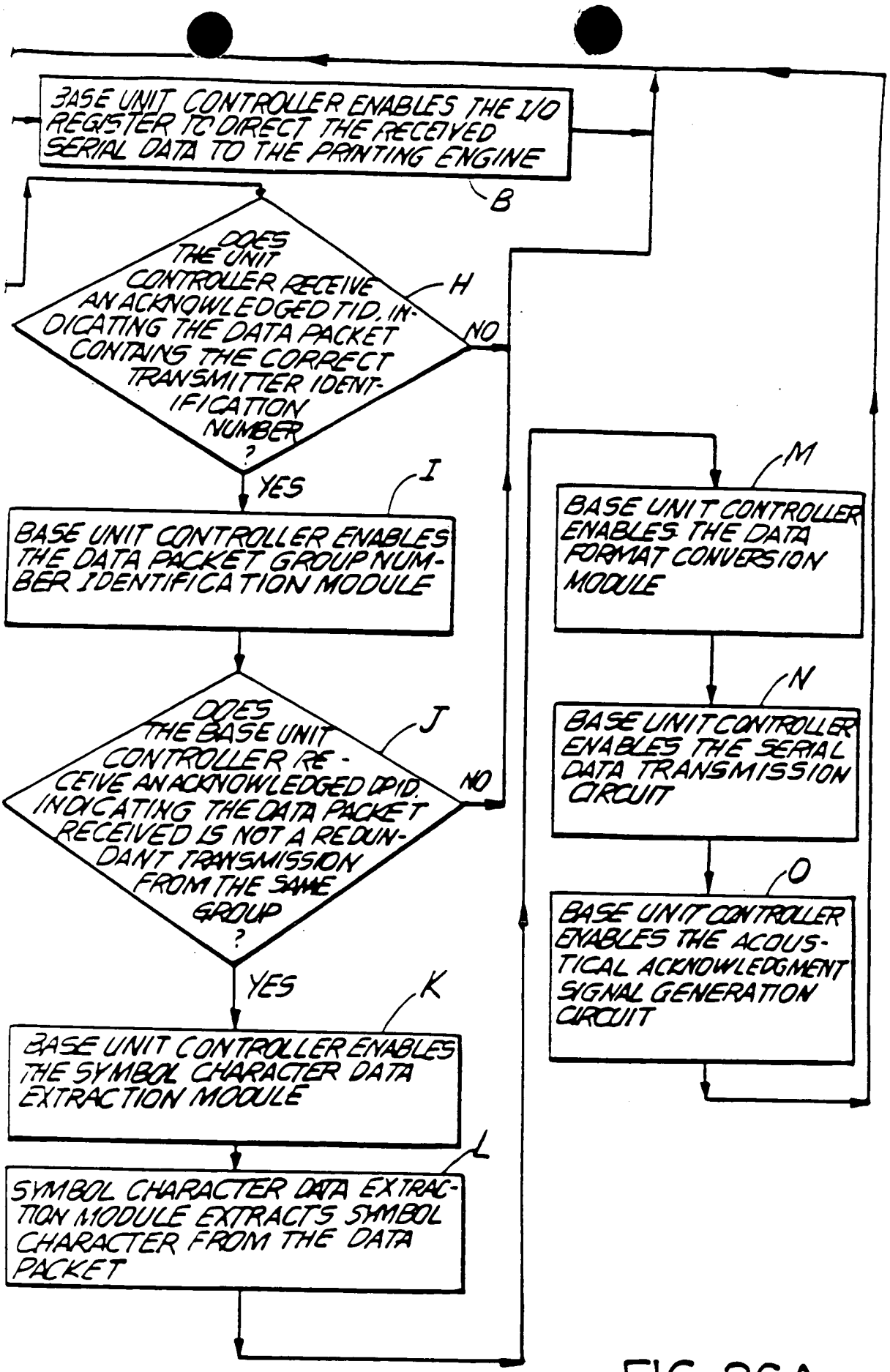

BASE UNIT CONTROLLER ENABLES THE I/O REGISTER TO DIRECT THE RECEIVED SERIAL DATA TO THE PRINTING ENGINE
B
DOES THE UNIT CONTROLLER RECEIVE AN ACKNOWLEDGED TID, INDICATING THE DATA PACKET CONTAINS THE CORRECT TRANSMITTER IDENTIFICATION NUMBER ?
H
NO
YES
I
BASE UNIT CONTROLLER ENABLES THE DATA PACKET GROUP NUMBER IDENTIFICATION MODULE
DOES THE BASE UNIT CONTROLLER RECEIVE AN ACKNOWLEDGED DPID, INDICATING THE DATA PACKET RECEIVED IS NOT A REDUNDANT TRANSMISSION FROM THE SAME GROUP ?
J
NO
YES
K
BASE UNIT CONTROLLER ENABLES THE SYMBOL CHARACTER DATA EXTRACTION MODULE
L
SYMBOL CHARACTER DATA EXTRACTION MODULE EXTRACTS SYMBOL CHARACTER FROM THE DATA PACKET
M
BASE UNIT CONTROLLER ENABLES THE DATA FORMAT CONVERSION MODULE
N
BASE UNIT CONTROLLER ENABLES THE SERIAL DATA TRANSMISSION CIRCUIT
O
BASE UNIT CONTROLLER ENABLES THE ACOUSTICAL ACKNOWLEDGMENT SIGNAL GENERATION CIRCUIT

FIG. 26A

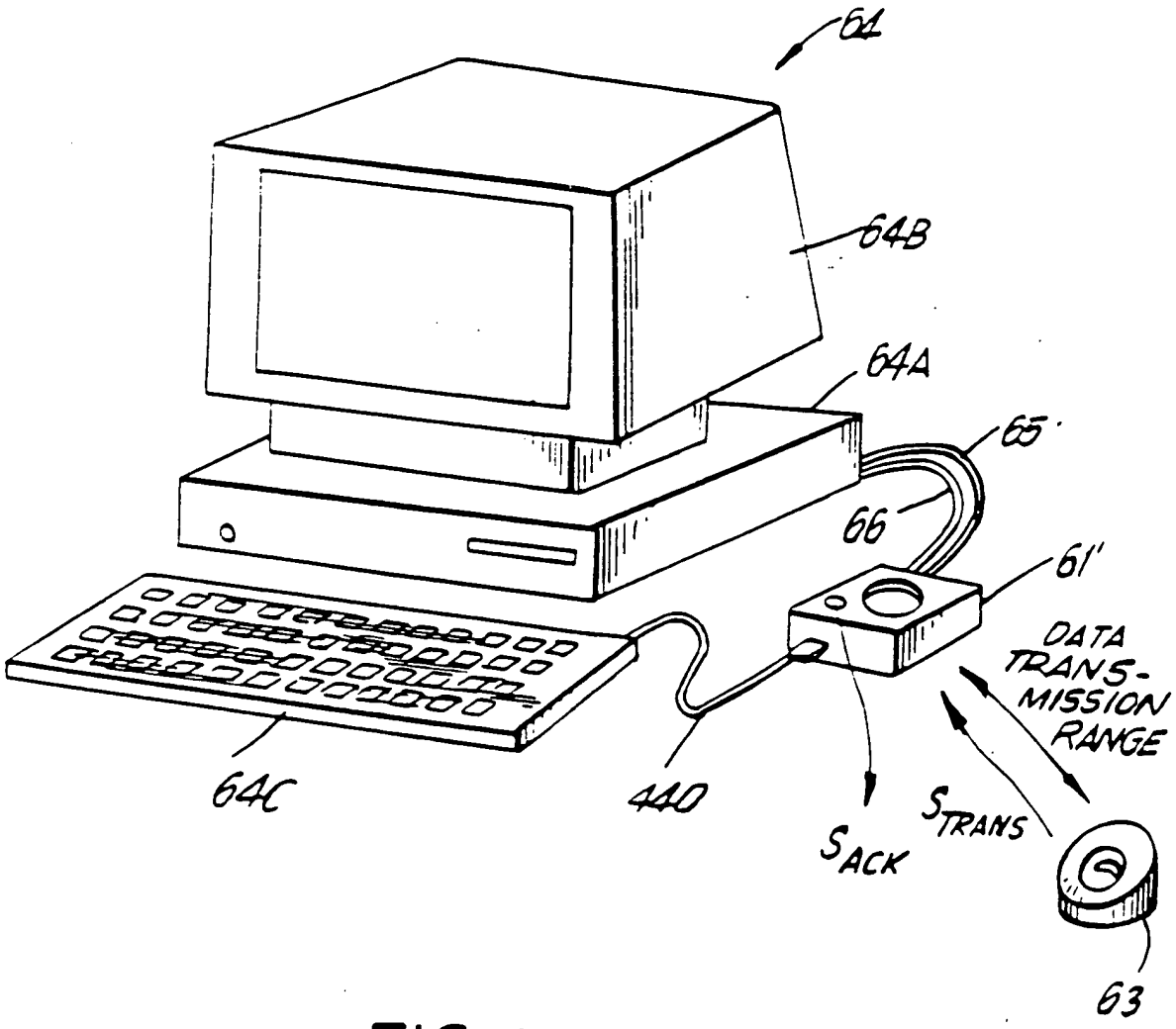

61
64B
64A
65
66
61'
DATA TRANS-MISSION RANGE
64C
440
SACK
STRANS
63

FIG. 27

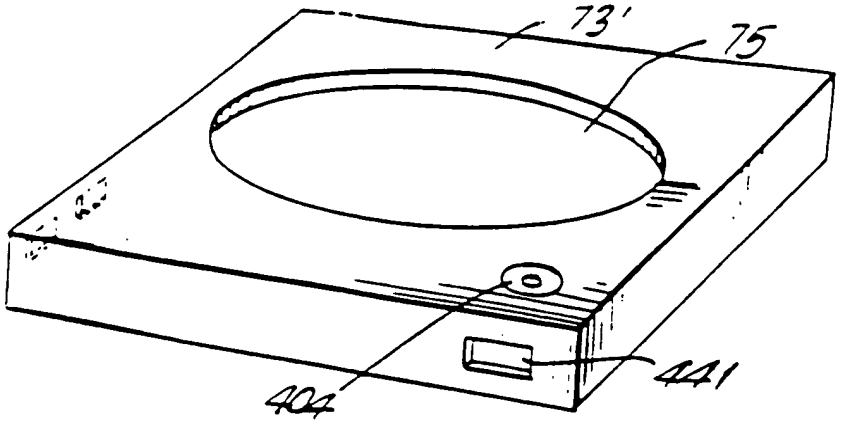


FIG. 28A

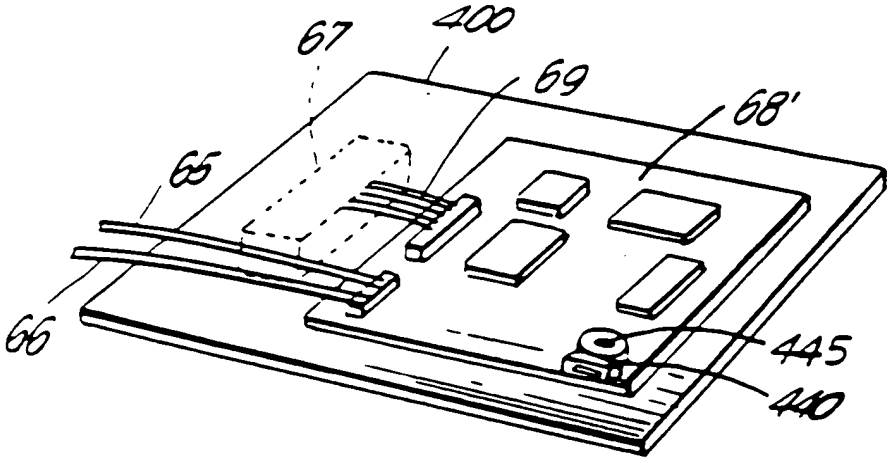


FIG. 28B

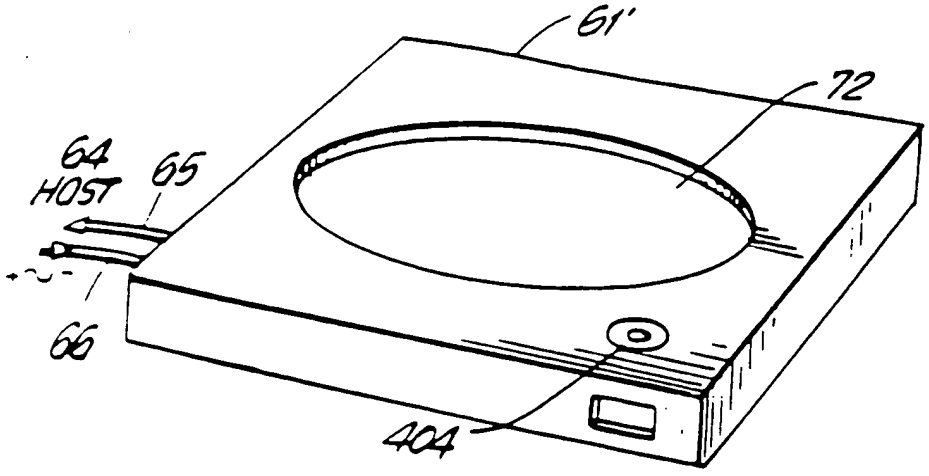


FIG. 28C

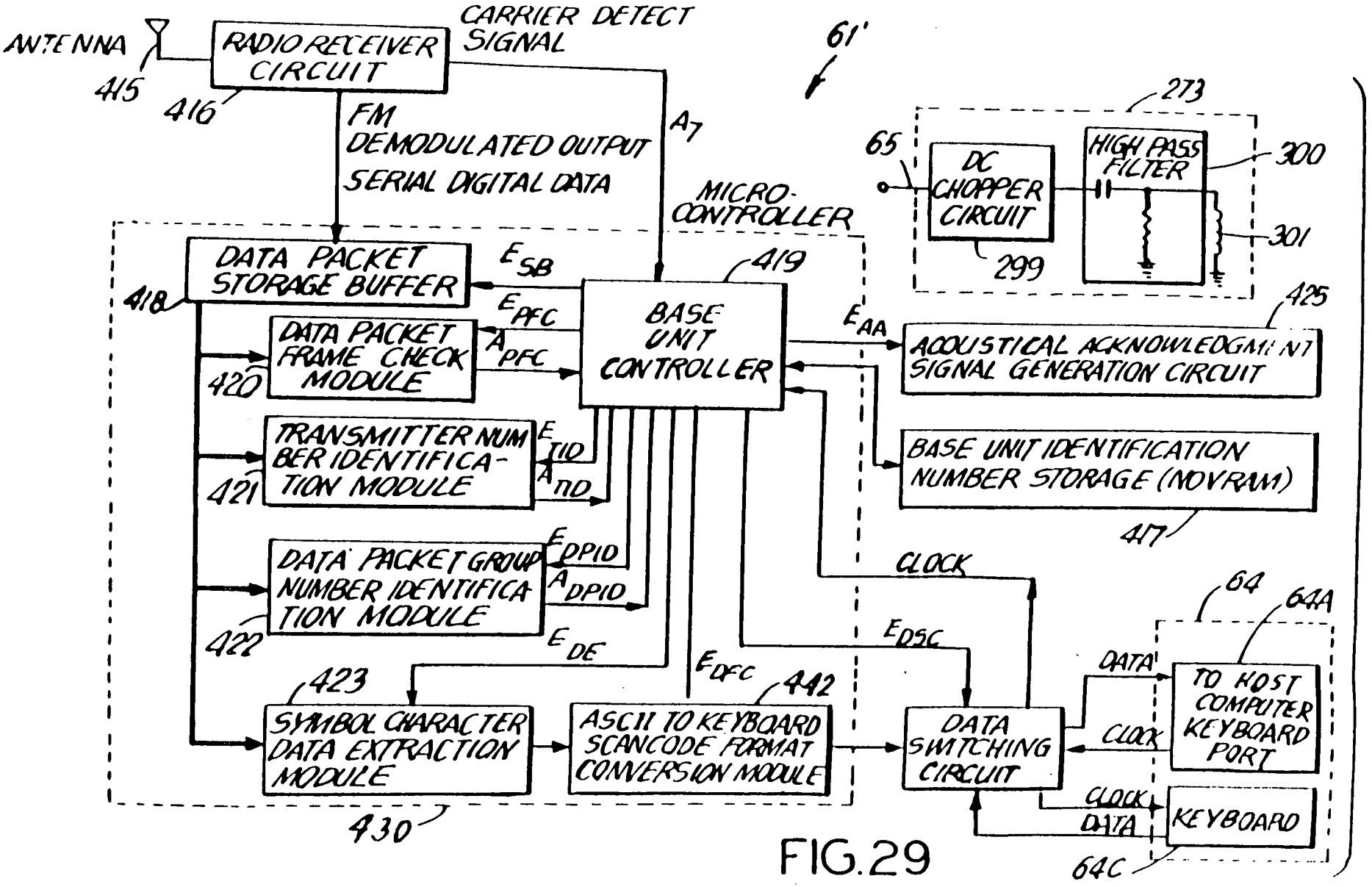

ANTENNA
415
RADIO RECEIVER CIRCUIT
416
CARRIER DETECT SIGNAL
A7
FM DEMODULATED OUTPUT SERIAL DIGITAL DATA
61'
273
65
DC CHOPPER CIRCUIT
299
HIGH PASS FILTER
300
301
MICRO-CONTROLLER
DATA PACKET STORAGE BUFFER
418
E SB
E PFC
A PFC
DATA PACKET FRAME CHECK MODULE
420
BASE UNIT CONTROLLER
419
E AA
425
ACOUSTICAL ACKNOWLEDGMENT SIGNAL GENERATION CIRCUIT
TRANSMITTER NUMBER IDENTIFICATION MODULE
421
E TID
A TID
BASE UNIT IDENTIFICATION NUMBER STORAGE (NOVRAM)
417
DATA PACKET GROUP NUMBER IDENTIFICATION MODULE
422
E DPID
A DPID
E DE
CLOCK
64
64A
E DSC
E DFC
423
442
SYMBOL CHARACTER DATA EXTRACTION MODULE
ASCII TO KEYBOARD SCANCODE FORMAT CONVERSION MODULE
DATA SWITCHING CIRCUIT
DATA
CLOCK
TO HOST COMPUTER KEYBOARD PORT
CLOCK
DATA
KEYBOARD
64C
430

FIG. 29

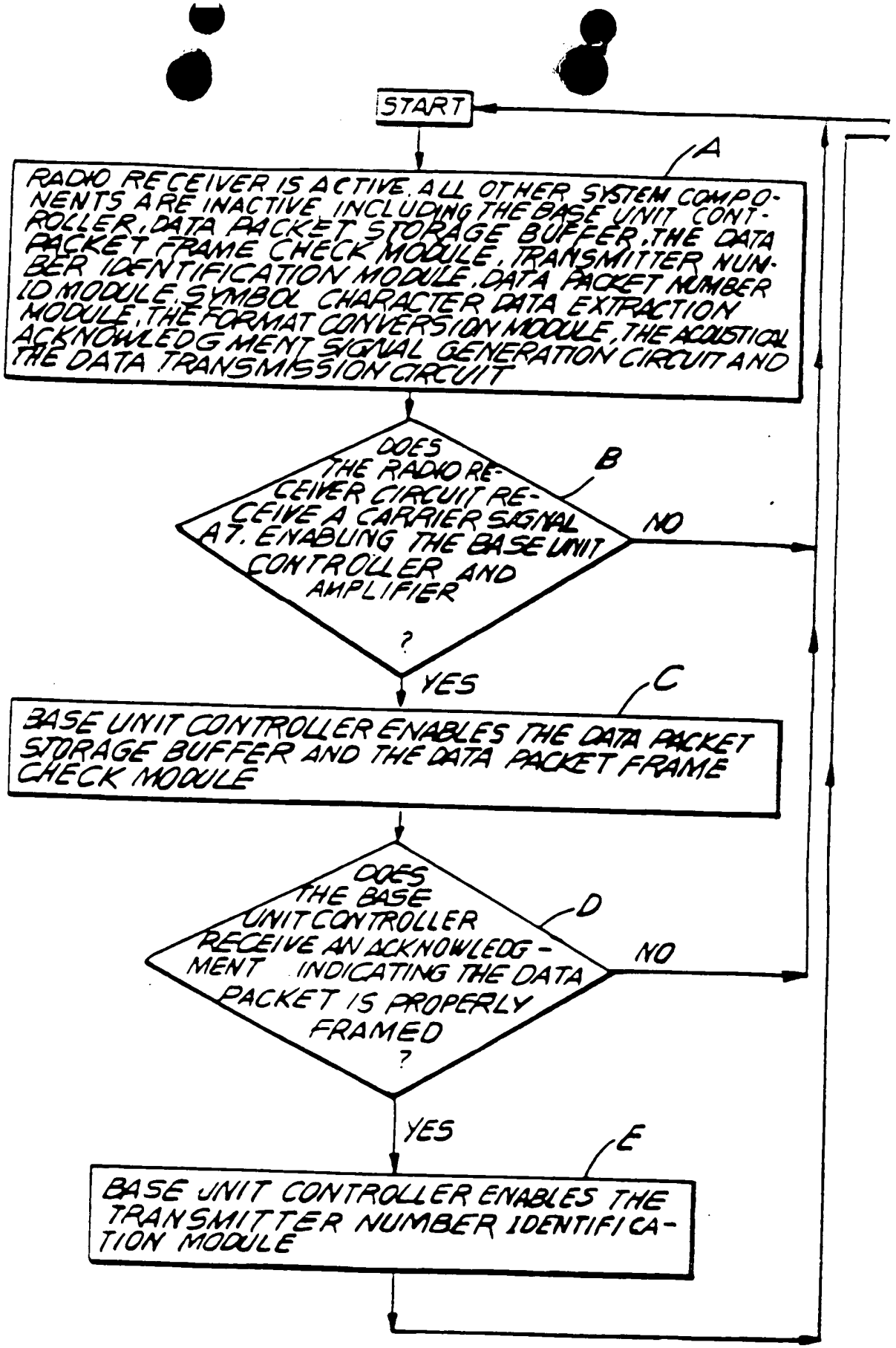

START
A
RADIO RECEIVER IS ACTIVE. ALL OTHER SYSTEM COMPONENTS ARE INACTIVE INCLUDING THE BASE UNIT CONTROLLER, DATA PACKET STORAGE BUFFER, THE DATA PACKET FRAME CHECK MODULE, TRANSMITTER NUMBER IDENTIFICATION MODULE, DATA PACKET NUMBER ID MODULE, SYMBOL CHARACTER DATA EXTRACTION MODULE, THE FORMAT CONVERSION MODULE, THE ACOUSTICAL ACKNOWLEDGMENT SIGNAL GENERATION CIRCUIT AND THE DATA TRANSMISSION CIRCUIT
B
DOES THE RADIO RECEIVER CIRCUIT RECEIVE A CARRIER SIGNAL AT ENABLING THE BASE UNIT CONTROLLER AND AMPLIFIER ?
NO
YES
C
BASE UNIT CONTROLLER ENABLES THE DATA PACKET STORAGE BUFFER AND THE DATA PACKET FRAME CHECK MODULE
D
DOES THE BASE UNIT CONTROLLER RECEIVE AN ACKNOWLEDGMENT INDICATING THE DATA PACKET IS PROPERLY FRAMED ?
NO
YES
E
BASE UNIT CONTROLLER ENABLES THE TRANSMITTER NUMBER IDENTIFICATION MODULE

FIG. 30

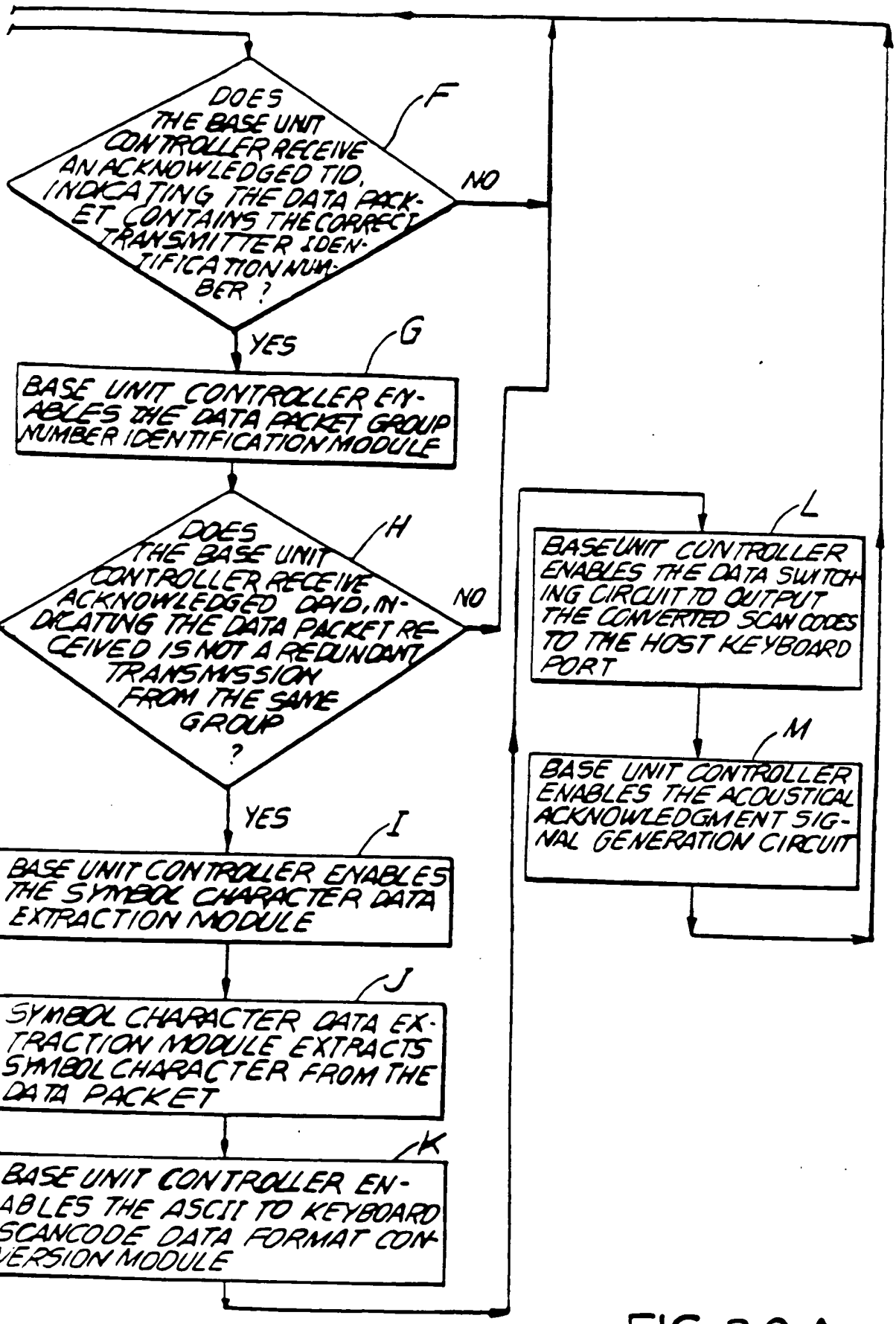

DOES THE BASE UNIT CONTROLLER RECEIVE AN ACKNOWLEDGED TID, INDICATING THE DATA PACKET CONTAINS THE CORRECT TRANSMITTER IDENTIFICATION NUMBER ?
F
NO
YES
G
BASE UNIT CONTROLLER ENABLES THE DATA PACKET GROUP NUMBER IDENTIFICATION MODULE
DOES THE BASE UNIT CONTROLLER RECEIVE ACKNOWLEDGED DPID, INDICATING THE DATA PACKET RECEIVED IS NOT A REDUNDANT TRANSMISSION FROM THE SAME GROUP ?
H
NO
YES
I
BASE UNIT CONTROLLER ENABLES THE SYMBOL CHARACTER DATA EXTRACTION MODULE
J
SYMBOL CHARACTER DATA EXTRACTION MODULE EXTRACTS SYMBOL CHARACTER FROM THE DATA PACKET
K
BASE UNIT CONTROLLER ENABLES THE ASCII TO KEYBOARD SCANCODE DATA FORMAT CONVERSION MODULE
L
BASE UNIT CONTROLLER ENABLES THE DATA SWITCHING CIRCUIT TO OUTPUT THE CONVERTED SCAN CODES TO THE HOST KEYBOARD PORT
M
BASE UNIT CONTROLLER ENABLES THE ACOUSTICAL ACKNOWLEDGMENT SIGNAL GENERATION CIRCUIT

FIG. 30A

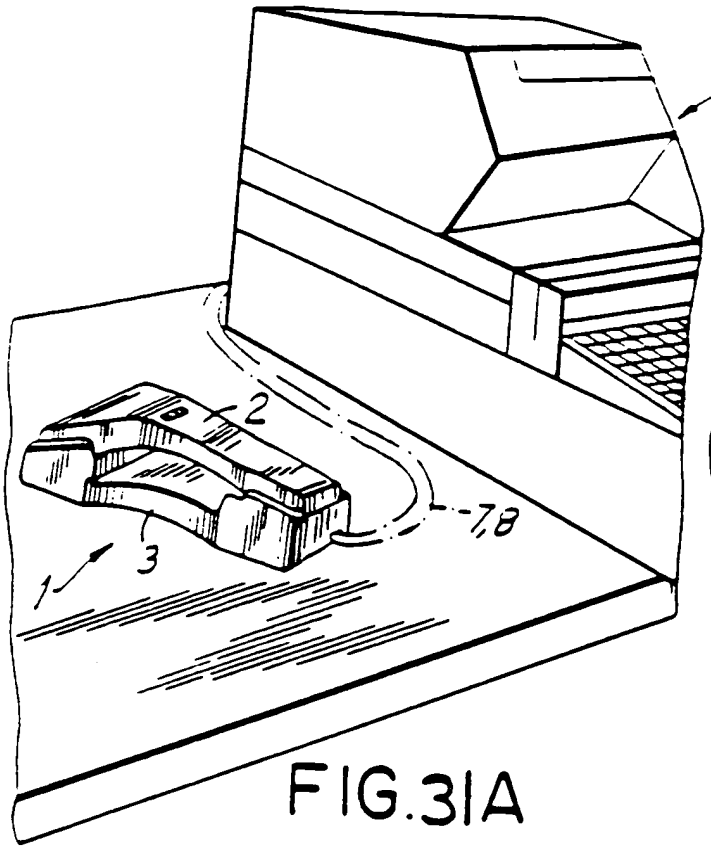


FIG.31A

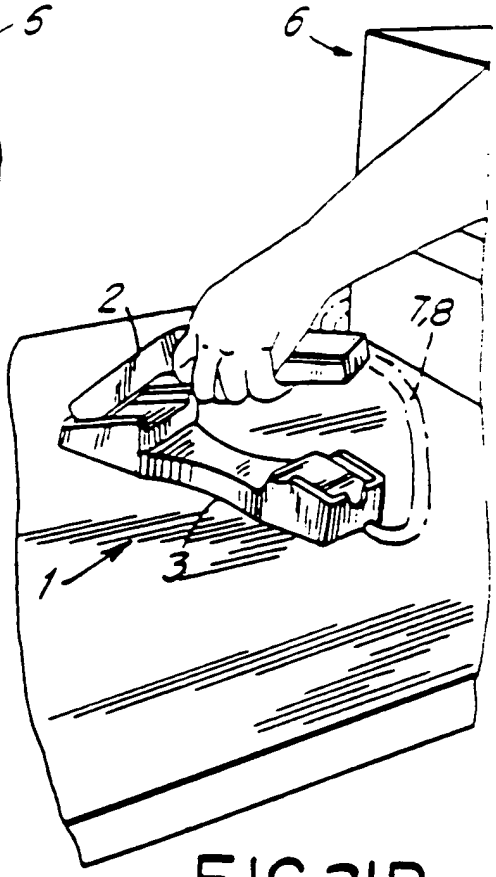


FIG.31B

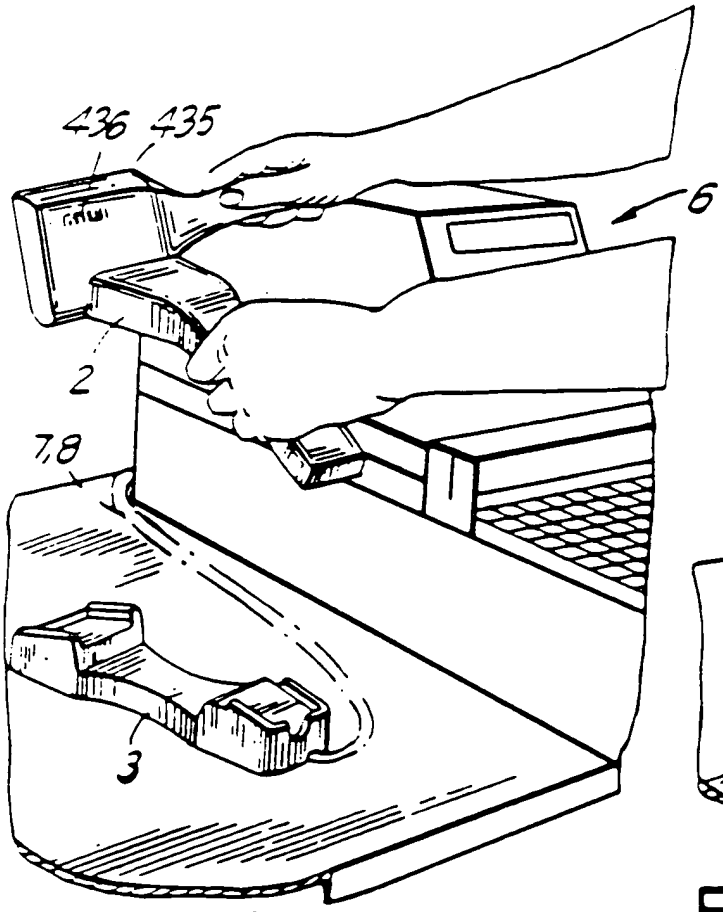


FIG.31C

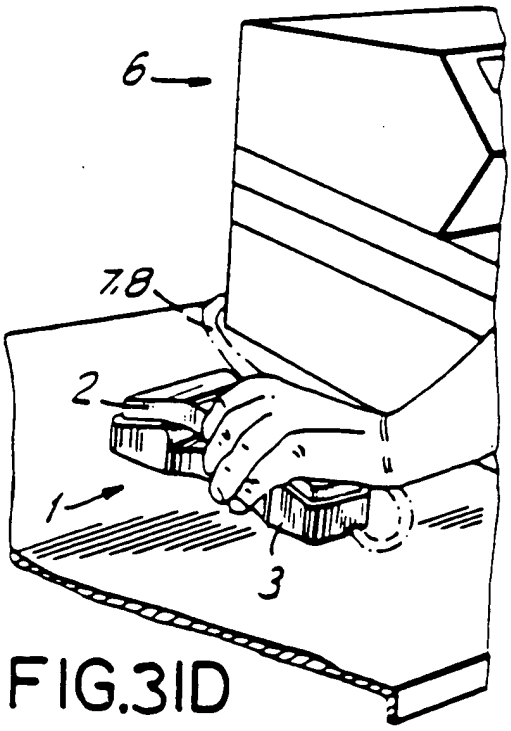


FIG.31D

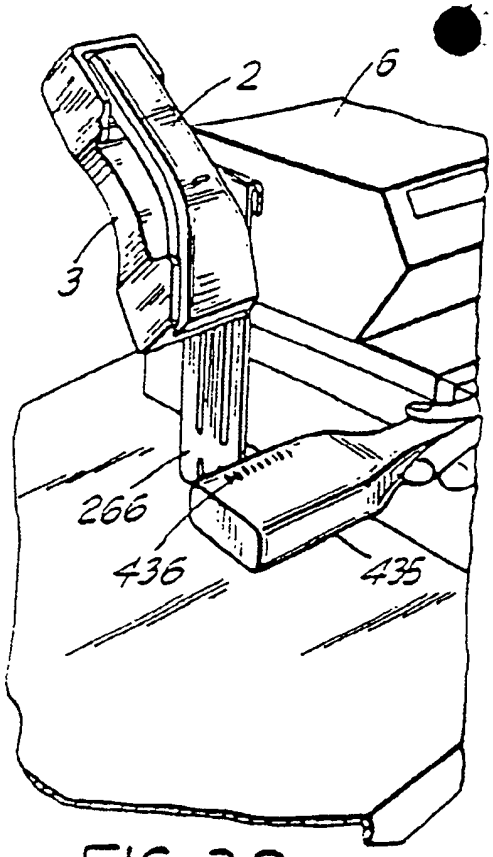


FIG. 32

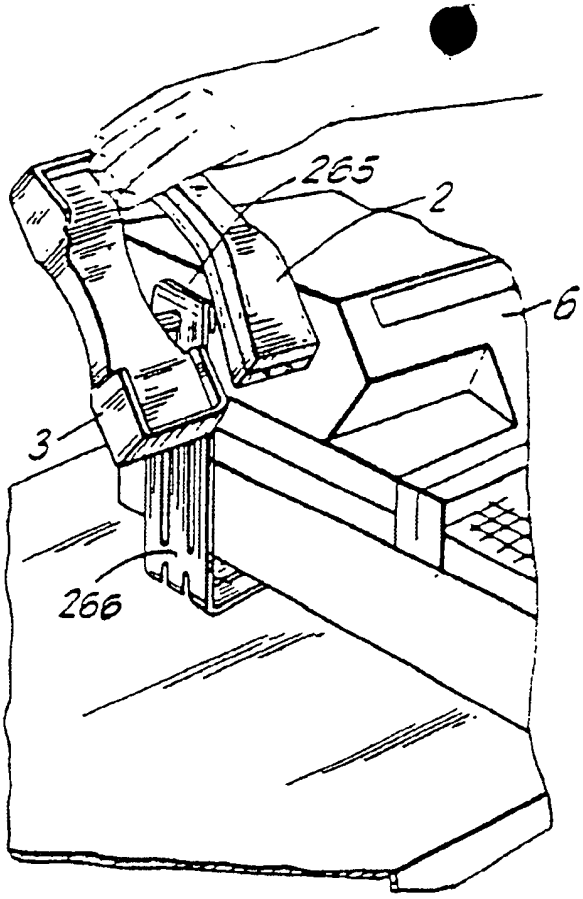


FIG. 33A

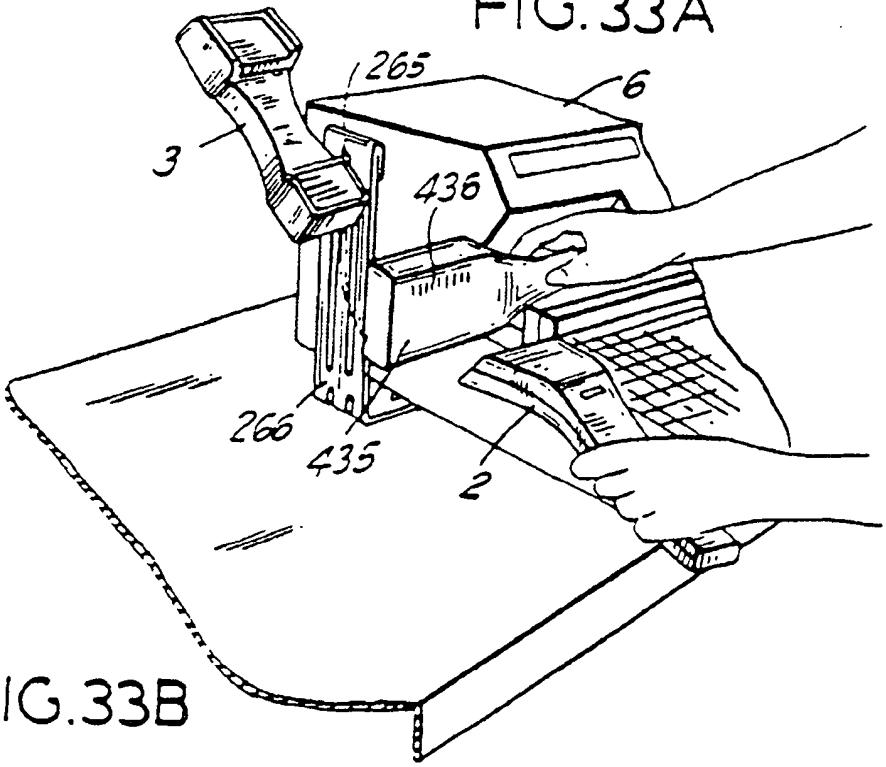


FIG. 33B